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ABSTRACT

This training manual for emergency medical technicians, one of 14 modules that comprise the Emergency Victim Care textbook, contains appendixes, a glossary, and an index. The first appendix is an article on communicating with deaf and hearing-impaired patients. Appendix 2, the largest section in this manual, is an introduction to medical terminology. This self-instructional programmed material contains a selection of the most common prefixes, roots, and suffixes. Answers to all exercises appear at the bottom of the pages. Appendix 3 provides names and addresses of organizations in Ohio involved with emergency medical services. An overview of relevant Ohio legislation is contained in Appendix 4. Other contents of this module are a 22-page glossary of terms and a subject index to the 14 modules. (YLB)

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EMERGENCY VICTIM CARE

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Module 14

—Appendix I: Communicating with Deaf and Hearing Impaired Patients
—Appendix II: Medical Terminology
—Ap[illegible]III: EMS
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Revised 1983

This text is intended for use as a learning aid and to excite your curiosity and eagerness to serve patients. This text is not exhaustive and the opinions and directory comments will change from time to time as new procedures and laws become effective.

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EMERGENCY VICTIM CARE

A TRAINING MANUAL FOR EMERGENCY MEDICAL TECHNICIANS

OHIO TRADE AND INDUSTRIAL EDUCATION SERVICE

DIVISION OF VOCATIONAL EDUCATION
STATE DEPARTMENT OF EDUCATION
COLUMBUS, OHIO

TO THE LEARNER

The 1983 Emergency Victim Care textbook revision has been grouped into 14 modules. The modules have been grouped by content matter as follows:

Module 1

Preface
Foreword
Acknowledgment
Student-Instructor Relationship

Personnel
Emergency Medical Service Vehicles
EMS Communication
Records and Reports

Module 2

Equipment
Safe Driving Practices
Legal Aspects
Controlling the Situation
Action Evaluation Conference

Module 3

Anatomy & Physiology

Module 4

Vital Signs
Patient Assessment

Module 5

Cardiopulmonary Resuscitation (CPR)

Module 6

Bleeding Control
Wounds and Bandaging
Shock

Module 7

Medical Emergencies

Module 8

Crisis Intervention
Drug-Related Problems

Module 9

Backboards/Moving and Handling the Victim
Fractures
Dislocations

Module 10

Injuries of the Eye, Ear, Nose, Abdomen, C.N.S. and Genitalia
Burns and Environmental Injuries

Module 11

Childbirth
Pediatric Emergency

Module 12

Water Accidents
Electrical Emergencies
Hazardous Materials and Radiation Accidents

Module 13

Extrication from Automobiles

Module 14

Appendix I: Communicating with Deaf and Hearing Impaired Patients
Appendix II: Medical Terminology
Appendix III: EMS Organizations
Appendix IV: Legislation
Glossary of Terms
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MODULE 14

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APPENDIX I

COMMUNICATING WITH DEAF AND HEARING IMPAIRED PATIENTS

Douglas Magilvy, M.S., EMT-P

INTRODUCTION

Among the many patients you work with during your career as an EMT, it is highly probable that some of these people will suffer from a hearing impairment. It has been estimated that there are approximately 14,000,000 Americans, one out of 16, in the hearing impaired category. Of this large group, approximately 1,800,000 people are deaf.

The term "hearing impaired" is generally defined as a lessening or reduction in a person's ability to hear sounds. This classification includes people who are hard of hearing; that is having sensorineural or auditory nerve conduction problems resulting in a partial loss of hearing, and people who are deaf, having a complete loss of hearing. Hearing impairment may be caused by trauma, illness, or nerve degeneration and may be present at birth or occur at any age later in life. Hearing impairment is common among older persons and indeed, your first exposure to a deaf or hard of hearing patient will quite likely be in this group.

Persons deaf from birth may have a speaking voice ranging from unintelligible sounds to near-normal speech. Those with poor speech are often embarrassed to speak in front of hearing people and are often inaccurately referred to as being mute. The terms deaf-mute or even worse, deaf and dumb, are not appreciated by hearing impaired individuals. The terms they prefer are "deaf" or "hearing impaired."

Deaf people will vary greatly in mode and ability of communication depending upon age, background, degree of hearing loss and level of education. They may rely on lip reading, manual sign language, written communication, or a combination of these. Despite all of the differences, deaf people have one thing in common: they rely on information they can see.

COMMUNICATION TECHNIQUES

The steps that should be followed in working with hearing impaired patients or the deaf parents of a hearing child include:

1. Recognition and awareness—Recognizing the person has a hearing impairment.

2. Communication with the hearing impaired patient—Applying all communication skills available to you to get information to the patient.

3. Feedback—Looking for responses from your patient that indicate you are being understood.

4. Adapting emergency care—Adapting your methods of care and treatment to the special needs of the hearing impaired.

RECOGNITION AND AWARENESS

The EMT must be able to quickly identify the hearing impaired patient. The deaf person in an accident is often assessed as drunk, having a head injury, or being beligerent. To identify a hearing problem look for repeated gestures with the hands, fingers, or arms. The motion of writing or looking for a paper and pencil may also help the EMT to identify a hearing impaired person. This person may also lack understanding of your instructions or exhibit movement of the lips without speaking. Any of these signs may indicate deafness. Ask the person, "Are you deaf?" or "Can you hear me?" or point to your ears and shake your head "no."

COMMUNICATION WITH THE HEARING IMPAIRED

People with hearing impairments communicate through any of these modes: spoken English; written English; and nonverbal, manual communication (including sign language and gestures).

There is a common belief among hearing people that all deaf people can lip-read (or speech-read). Like other stereotype beliefs, this is not true. Lip reading is very difficult to learn. Very few deaf people lip-read well. Many do it only adequately, most are unable to lip-read at all. The effectiveness of this mode of communication is dependent upon several factors: how well the deaf person understands the English language and its grammatical structure and how accents and dialects affect how the hearing person pronounces words. Physical features of the speaker, including protruding teeth, mustaches and beards, may give the speech reader difficulty. In ideal situations, the average, deaf lip reader can read *only* 30%-40% of the spoken words; the remainder of the words must be guessed! Stress and trauma situations may further impair this ability.

There are things you can do to improve the patient's ability to lip-read. Speak slowly and clearly—do not shout or whisper, speak in a normal volume. Use plenty of facial expressions and gestures as you speak. Try rephrasing sentences to ask the same questions and be sure to use simple language—not complicated medical terminology. Keep your hands away from your mouth while speaking, get rid of your chewing gum and always speak directly to the patient. Stand where the sun shines on your face. At night, shine a flashlight on your face while talking. Make sure patients who wear eyeglasses or hearing aids have these items, if needed, and if they don't interfere with your emergency care.

When using written communication (which may be very useful in medical situations where specific history, symptoms and drug names are important), print in large, legible letters. Write in short phrases using simple grammar. Provide paper and pencil or pen to deaf individuals so they may respond.

Manual communication includes sign language, gestures, facial expression, and pantomime. For many simpler thoughts, gestures and facial expressions are sufficient. We all use these on a routine basis. Nodding your head "yes" or "no," the questioning shoulder shrug that says "I don't know," waving "hi" and "bye," "come here," and "go away" are all done without words. For more complicated messages, pantomime or manual sign language (if you have been so taught) will be needed. American Sign Language (also referred to as Ameslan or ASL) is a distinct language and must be learned much like one learns a foreign language. ASL is often thought of as a foreign language, only it is done with manual signs rather than voice. Fingerspelling is another manual form of language used by the deaf, usually in conjunction with ASL. Both sign language and fingerspelling can be easily learned, and with practice you can become relatively proficient in its use.

On the following pages are pictures illustrating fingerspelling and some commonly used informational signs. Practice these with other members of your department, or practice alone, watching yourself in a mirror. In many cases, knowledge of fingerspelling will be sufficient for adequate communication.

FEEDBACK

Watch for signs of understanding or comprehension. Often deaf people will nod "yes" even if there is no real understanding of your message. Many times the person cannot follow your thought but is embarrassed to tell you of the misunderstanding. As mentioned before, rephrase your question in different ways, use gestures and facial expressions to get the point across. The use of body language and pantomime will often reveal the patient's understanding or confusion.

ADAPTING EMERGENCY CARE

Because your patient may not be able to answer all your questions, your assessment must be more intensive. Watch for signs of pain as you check for broken bones and internal injury. Talk to the patient during treatment. Often, the fact that you are talking and explaining will in itself offer reassurance. Your calm, patient manner will lessen the anxiety of the deaf individual.

When practical, allow the deaf patient unrestricted use of the arms and hands to allow for possible communication and again to lessen anxiety. Intravenous fluids should be administered through the **non-dominant** hand or forearm.

INTERPRETERS

In some situations there may be someone on the scene who can interpret for you. This person may be a family member, friend, or bystander. If capable of communicating with the deaf patient or deaf parents of a child, allow this person to help as long as necessary, **including** riding with the patient to the hospital.

Notify the hospital by telephone or radio if an interpreter will be necessary. Under the provisions of Section 504 of the Rehabilitation Act of 1973 (P.L. 93-112) it states in subsection 84.52(c): "A recipient hospital that provides health services or benefits shall establish a procedure for effective communication with persons with impaired hearing for the purpose of providing emergency health care." Section 504 also requires that the hospital provide this interpreter at no cost to the hearing impaired patient.

FURTHER INFORMATION

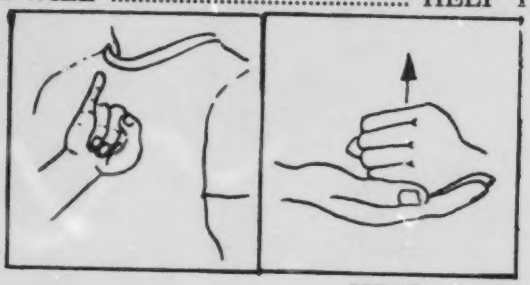
More information on working with hearing impaired citizens or learning to use sign language can be obtained from the following sources.

Ohio Chapter—Registry of Interpreters
for the Deaf
986 Caniff Road
Columbus, Ohio 43221

National Association of the Deaf
814 Thayer Avenue
Silver Springs, MD 20910

National Registry of Interpreters for
the Deaf
P.O. Box 1339
Washington, D.C. 20013

I WILL ..... HELP YOU

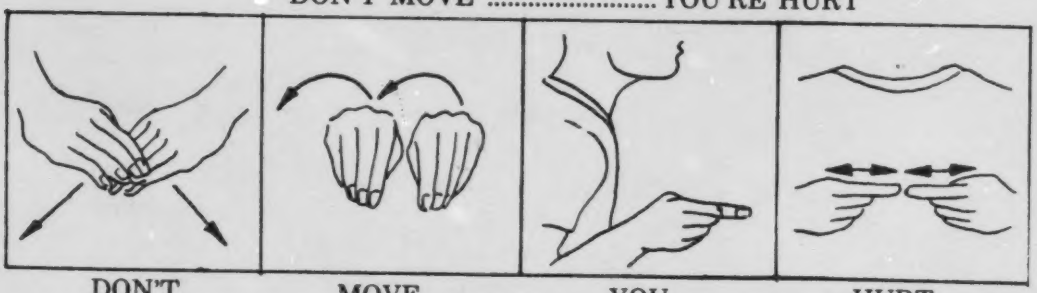


HELP

WHAT'S WRONG?

WHAT'S WRONG?

DON'T MOVE ..... YOU'RE HURT



DON'T MOVE YOU HURT

BREATHE SLOWLY

BREATHE SLOWLY

DO YOU HURT HERE!

YOU HURT "POINT"

YOU ..... HAVE A BROKEN

YOU REALLY BROKE "POINT"

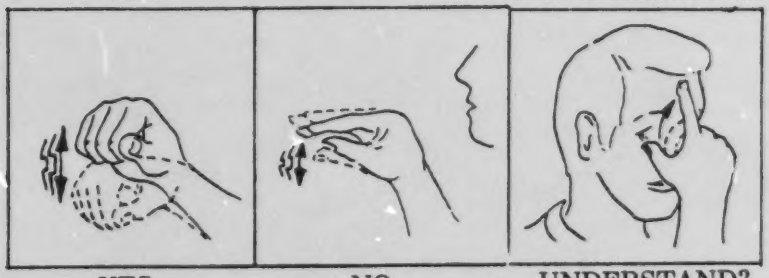
ARE YOU ON ANY MEDICATION ? .....

YOU MEDICATION PILLS

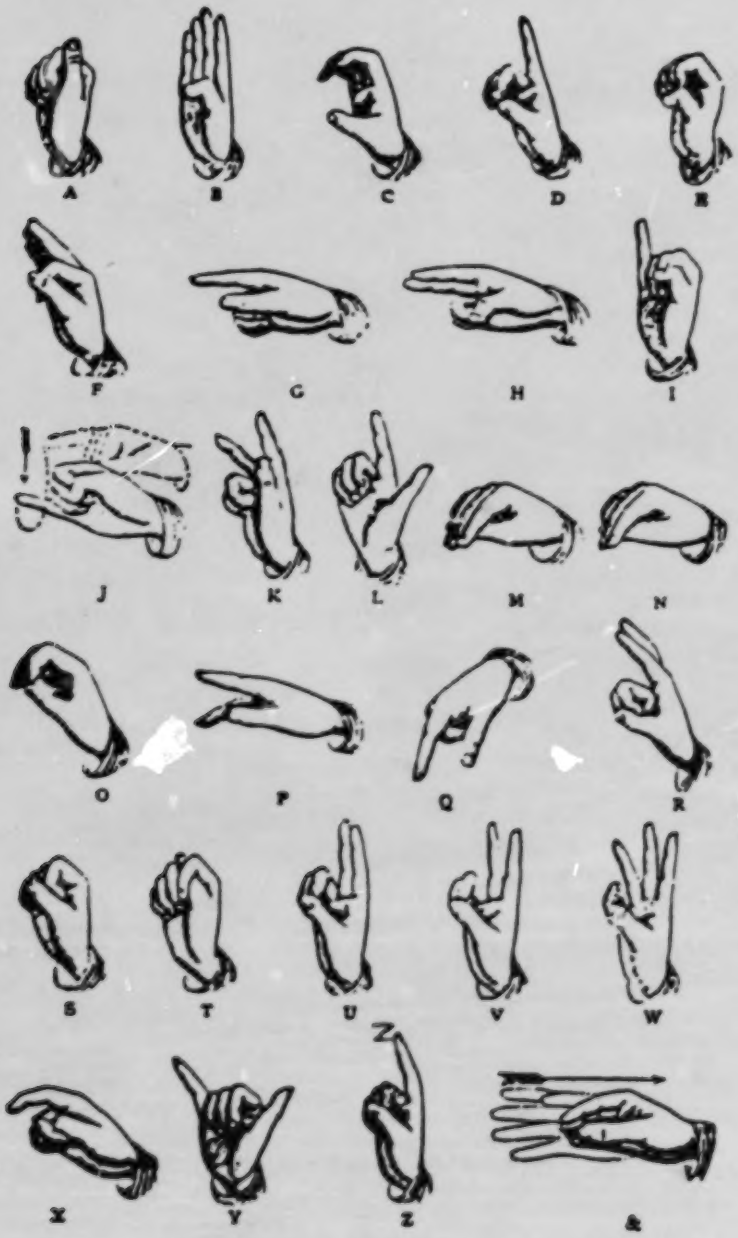
WHEN DID YOUR PAIN START?

WHEN PAIN START?

YES NO DO YOU UNDERSTAND?



YES NO UNDERSTAND?


A
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APPENDIX II

MEDICAL TERMINOLOGY

PREFIXES, ROOTS AND SUFFIXES OF MEDICAL TERMINOLOGY

This program is an introduction to medical terminology. Although it is not a complete dictionary of medical terms, it does contain a selection of the most common prefixes, roots and suffixes.

The program is not a magical device that will automatically teach you anything. You can only learn medical terminology by applying yourself to the program.

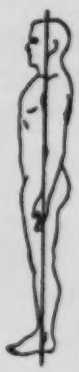
Medical terminology was not designed to confuse laypersons; instead it was designed to provide uniformity in the meaning of terms. In early medicine, there was little uniformity; consequently, confusion resulted when different words were used to describe the same structure of condition.

Eventually, Greek and Latin words were adopted and certain principles of medical terminology evolved. Those principles are:

1. Each part should have one name only.
2. The names should be as short and simple as possible.
3. Related structures should have similar names.
4. Adjectives, with few exceptions, should be in opposing pairs.

The *mid-sagittal* plane is a *plane* which extends the length of the body and divides it into *equal* portions.

lateral—if a part is farther from mid-sagittal plane than another part it is lateral. (Ex: ear lateral to eye)
medial—if a part is closer to mid-saggital plane than another, it is medial. (Ex: eye medial to ear)

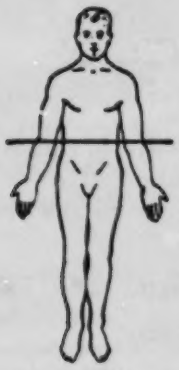


A *coronal (front) plane is any plane* which extends the length of the body separating front from the rear.

anterior—(front) (Ex: nose is anterior to back of head)
posterior—(back) (Ex: back of head is posterior to the forehead)

This program will teach you the basic terminology and show you how these principles are applied.

The first four (4) pages are basic terms, that should be studied before starting the program.



A *transverse plane is any* plane which extends the width of any section of body and divides body into a top and bottom section.

superior—(above) (Ex: nose superior to chin)
inferior—(below) (Ex: foot inferior to knee)

The *normal anatomical position* has the body at the position of attention with the palms facing forward.

Abduction—movement away from midline

Adduction—movement toward the midline

Flexion—shortening or closing of an angle

Extension—lengthening or opening of an angle

MEDICAL TERMINOLOGY

Location		*Example*
ad	to, at	adduction
ante	before	antefebrile
endo	inside/within	endocranial
epi	on, upon	epidermal
hyper	excess/above	hypertension
hypo	less/under	hypodermic
inter	between	intercostal
intra	within	intrarenal
peri	around	pericardial
retro	behind	retrocardiac
sub	under	subcostal

Condition		*Example*
a, an	without	anemia
algia	pain	neuralgia
bi	two	bilateral
bio	life	biology
blast	forming cell	erythroblast
ectomy	surgical removal of a part	lobectomy
emia	condition of blood	anemia

Condition		*Example*
gen	produce	ovigenetic
itis	inflammation	cystitis
logy	study of	biology
osis	condition	neurosis
pathy	disease	crainopathy
scopy	visual examination of	endoscopy
stasis	standing still	hemostasis
stenosis	narrowing	arterio-stenosis
tomy	surgical incision	cystotomy

Anatomical parts		*Example*
aden	gland	adenectomy
adip	fat	adiposis
arter	artery	arterectomy
brachi	arm	abrachial
cardi	heart	cardialgia
cephal	head	cephalitis
chondri	cartilage	subchondrial
cost	rib	subcostal
crani/cranium	skull	craniectomy
cyst	bladder	epicystic
cyte	cell	erythrocyte

Anatomical parts		*Example*
derma/dermat/o	skin	dermatology
duct	passage tube	oviduct
gastr	stomach	gastritis
hem/o/hemat	blood	hematology
hepat	liver	hepatitis
myo	muscle	myocardium
neuro	nerve	neurocyte
ophthalm	eye	ophthalmology
oste	bone	ostectomy
ot/o	ear	otoscopy
ov/i	egg	ovicyte
ren/	kidney	intrarenal
nephr	kidney	nephritis

WORD ENDINGS OF VARIOUS PARTS OF SPEECH

Parts of Speech	*Endings*	*Example*
Noun	*um or ium* (Words not ending in a vowel use *ium.*) (Words ending in a vowel use *um.*)	gastrium cardium
Adjective	*al*	cardial
Noun ending for verb or noun suffix	*ion*	adduction
Pertaining to	*ac* (Adjective or noun depending on use)	cardiac

DEFINITIONS

Anatomy is the study of the structures of the human body.

Physiology is the study of the functions of the body.

Unilateral refers to parts of one side of the body (heart, liver).

Bilateral refers to parts of both sides of the body (arms, legs).

A point of origin is where the extremities (legs, arms) leave the body; terms of location associated with points are: *proximal (closest to)* and *distal (farther from)*; the elbow is closer to the shoulder than the hand—the elbow is the promixal to the hand. The hand is distal to the elbow.

DIRECTIONS

Cover the answers at the bottom of the page with a folded piece of paper.

1. Anatomy is a study of the structures of the human body. The arm is a structure of the human body. A study of the structure of the arm then would be a study of _____

2. The leg, like the arm, is also a _____ of the _____ body.

3. Anatomy is the study of the _____ of the _____ body.

4. Physiology is a study of the functions of the human body. Digestion, respiration and reproduction are all _____ of the human body.

5. Anatomy is a study of the _____ of the human body. _____ is a study of the _____of the human body.

6. Movement is a _____ of the human body. A study of movement would be a study of _____

7. A study of the structure of the ribs would be a study of _____ .

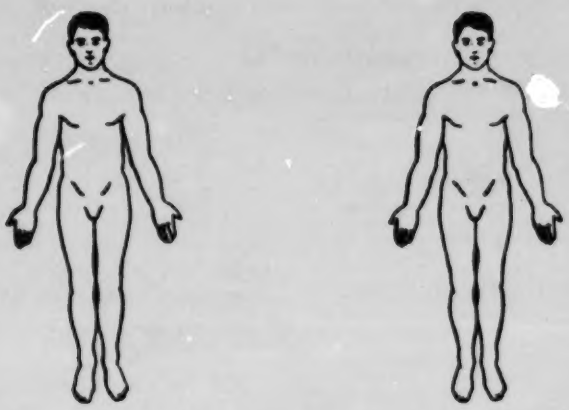
8. Physiology is a study of the (____ structures, ____ functions) of the human body.

9. Define anatomy. _____
_____
_____

10. Define physiology. _____
_____
_____

Answers:

1. anatomy
2. structure, human
3. structures, human
4. functions
5. structures, Physiology, functions
6. function, physiology
7. anatomy
8. functions
9. A study of the structures of the human body
10. A study of the functions of the human body



A. B.

11. Whenever dealing with the human body, references are made with the body in the normal anatomical position. The normal anatomical position has the body at the position of attention with the palms facing forward. Which is the normal anatomical position? (____ both, ____ A, ____ B, ____ neither)

12. The normal anatomical position has the body at the position of (____ attention, ____ rest) with the palms facing (____ rearward, ____ forward).

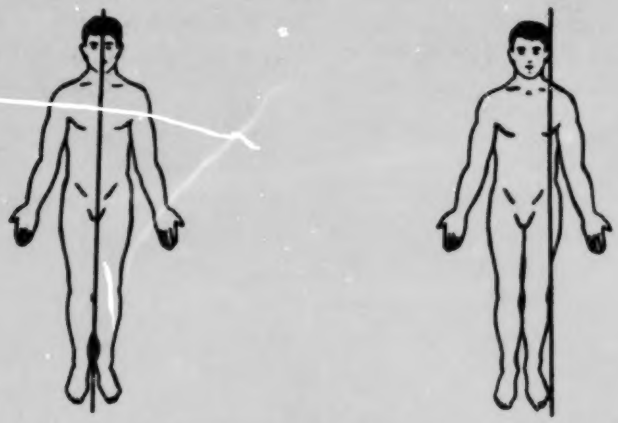
13. The normal anatomical position is

    a. the position of rest with the palms facing forward.
    b. the position of attention with the palms facing backward.
    c. the position of rest with the palms facing forward.
    d. the position of attention with the palms facing forward.

14. For positive identification and location of specific parts of the body, the human form is divided by three anatomical planes. The mid-sagittal or mid-line, transverse, and coronal or frontal are all _____ planes.

Answers:

11. both
12. attention, forward
13. d. the position of attention with the palms facing forward
14. anatomical



A. B.

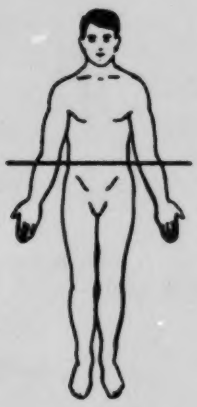
15. The mid-sagittal plane is an imaginary plane which extends the length of the body and divides the body into equal right and left portions. Which drawing above depicts the mid-sagittal plane? (____ both, ____ A, ____ B, ____ neither)

16. Draw in the mid-sagittal plane on the figure above.

Answers:
15. A

17. The mid-sagittal plane is an imaginary plane which extends the
    a. width of the body and divides the body into a top and bottom section
    b. length of the body and divides the body into equal right and left portions.
    c. length of the body, separating the front of the body from the rear of the body.

A.



B.

18. A transverse plane is an imaginary plane which extends the width of any section of the body that divides the body into a top and bottom section. Which illustration above indicates a transverse plane? (____ both, ____ A, ____ B, ____ neither)

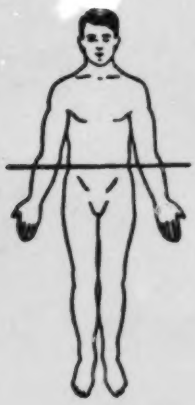
Answers:

17. b
18. B

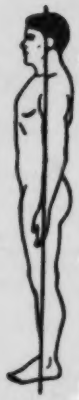
19. Draw in a transverse plane on the figure above.

20. A transverse plane is an imaginary plane which extends the
    a. width of the body and divides the body into a top and bottom section.
    b. length of the body and divides the body into equal right and left portions.
    c. length of the body, separating the front of the body from the rear of the body.

Answers:
20. a

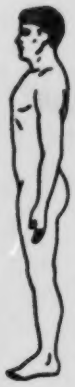


A.



B.

21. A coronal or frontal plane is an imaginary plane extending the length of the body from the rear of the body. Which drawing above depicts a coronal plane? (____ both, ____ A, ____ B, ____ neither)



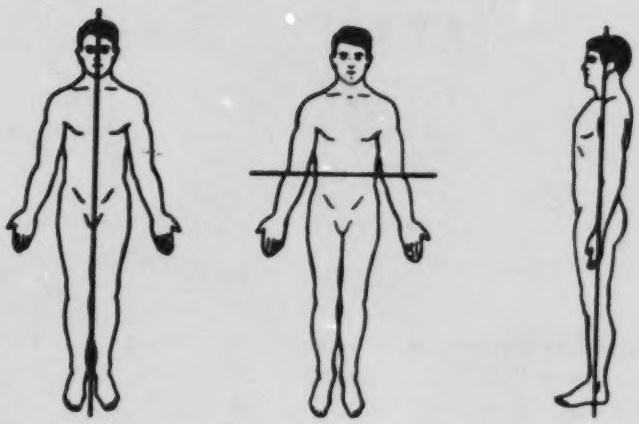
22. Draw in a coronal plane on the figure above.

Answers:

21. B

23. A coronal plane is an imaginary plane extending the

a. width of the body and divides the body into a top and bottom section.
b. length of the body and divides the body into equal right and left portions.
c. length of the body, separating the front of the body from the rear of the body.

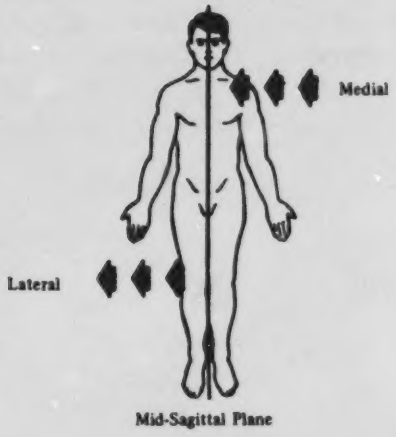


A. _____ B. _____ C. _____

24. Label the planes indicated on the drawings above as mid-sagittal plane, transverse plane, coronal plane.

Answers:

23. c
24. a. mid-sagittal, b. transverse, c. coronal



25. The mid-sagittal plane has two terms of location connected with it. A part is said to be medial if it is located closer to the mid-sagittal plane than another part. The nose is medial (closer to the mid-sagittal plane) to the ear. The eye would be _____ to the ear.

26. The tip of the nose is _____ to the eye.

27. A part is said to be lateral if it is farther from the mid-sigittal plane than another part. The eye is medial to the ear, but the ear is _____ to the eye.

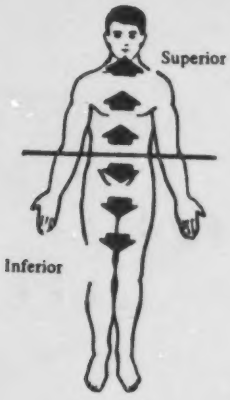
28. The tip of the nose is medial to the eye, but the eye is _____ to the tip of the nose.

29. The eyes are _____ compared to the ears, but compared to the nose, the eyes are _____ .

30. Two terms of location connected with the mid-sagittal plane are _____ and _____ .

Answers:

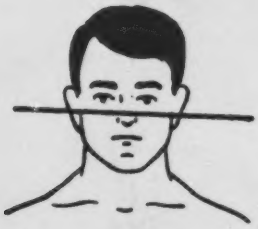
25. medial
26. medial
27. lateral
28. lateral
29. medial, lateral
30. lateral, medial



Transverse Plane

31. A transverse plane gives us two terms of location: superior, meaning above, and inferior, meaning below. A thing that is better or above something else is said to be _____.

32. Something that is inferior is (____ above, ____ below) standard.



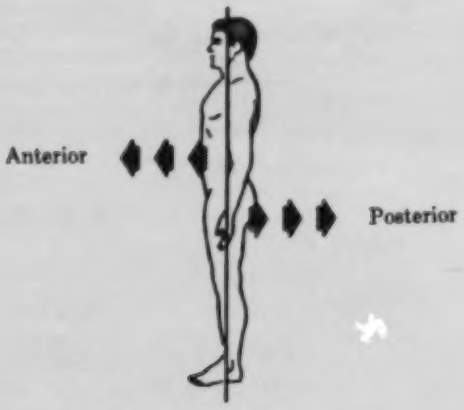
33. With a transverse located as in the drawing above, the forehead is _____ to the chin.

34. The two terms of location used in reference to a transverse plane are_____ and _____ .

Answers:

31. superior
32. below
33. superior
34. superior, inferior

35. The two terms of location used in reference to the mid-sagittal plane are _____ and _____ .



Coronal (Frontal) Plane

36. A coronal plane has two terms of location: anterior, meaning in front, and posterior, meaning in back. The nose would be located (____ anterior, ____ posterior) to the back of the head.

37. With a coronal plane located as in the drawing, the buttocks are located _____ to the nose.

Answers:

35. medial, lateral
36. anterior
37. posterior

Coronal (Frontal) Plane

38. The two terms of location connected with a coronal plane are _____ and _____ .

39. The terms of location connected with the mid-sagittal plane are _____ and _____.

The terms of location connected with a transverse plane are _____ and _____ .
The terms of location connected with a coronal plane are _____ and _____ .

40. A point of origin is the beginning of an extremity or system. For example, the mouth is the point of origin for the digestive system, the shoulders would be the point of origin for the _____, while the thigh would be the _____ of _____ for the legs.

41. Two terms of location connected with the points of origin are proximal and distal. If proximal means closest to, then distal must mean _____ from.

42. When discussing a part and making reference to the point of origin, the terms _____, meaning closest to, and _____, meaning farthest from, are used.

43. The shoulder is the point of origin for the upper extremities. The elbow is closer to the shoulder than the hand. Therefore, the elbow is _____ to the hand.

Answers:

38. anterior, posterior
39. lateral-medial, superior-inferior, anterior-posterior
40. arms, point, origin
41. farthest
42. proximal, distal
43. proximal

44. In the same light, the hand would be _____ to the elbow.

45. The point of origin is the beginning of a system or extremity. Two terms of location are _____, meaning closest to the point of origin and _____, meaning farthest from the point of origin.

46. An article that is close by is in close proximity or _____ .

47. An article that is not close by is distant, or _____ .

48. Proximal and distal are used as terms of relationship, i.e., the elbow is distal to the shoulder,, but the shoulder is proximal to the arm. Enter the word distal or proximal below.

    a. The elbow is _____ to the wrist.
    b. The fingers are _____ to the elbow.
    c. The wrist is _____ to the elbow.
    d. The knee is _____ to the heel.

49. Unilateral means pertaining to or affecting only one side. A pain that affects only one arm would be a _____ pain.

50. The removal of one leg could be considered to be a _____ amputation.

51. Bilateral, however, means pertaining to or affecting both sides of the body. Dislocating both shoulders would be a _____ dislocation.

52. The amputation of one arm would be a _____ amputation, while the amputation of both legs would be a _____ amputation.

53. Unilateral means pertaining to or affecting _____ side, while bilateral means pertaining to or affecting _____ sides.

54. A part that is closest to the point of origin is _____ .

55. A part that is farthest away from the point of origin is _____ .

56. An item that pertains to or affects only one side of the body is _____, while an item that pertains to or affects both sides of the body is _____ .

Answers
44. distal
45. proximal, distal
46. proximal
47. distal
48 proximal, distal, distal, proximal
49. unilateral
50. unilateral
51. bilateral
52. unilateral, bilateral
53. one, both
54. proximal
55. distal
56. unilateral, bilateral

57. Terms of location may sometimes be used together. You have two eyes, so the eyes are (__ unilateral, ____ bilateral). The eyes are located above the tip of the nose, so the eyes are (superior, ____ inferior) to the tip of the nose. The eyes are also located behind the tip of the nose, or the eyes are (____ anterior, ____ posterior) to the tip of the nose. In addition, the eyes are farther from the mid-line than the tip of the nose, so the eyes are (____ lateral, ____ medial) to the tip of the nose.

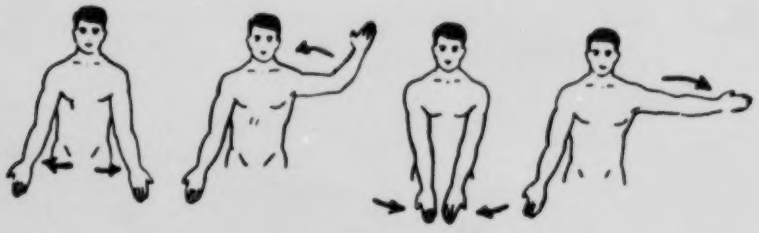
58. Using this terminology, you can say the eyes are _____ and the eyes are to the tip of the nose _____ , _____ and _____.

59. The eye to the ear is (circle the letter that is completely correct).

    a. anterior — lateral
    b. posterior — medial
    c. anterior — medial
    d. posterior — lateral

60. The foot to the knee is:

    a. superior
    b. inferior
    c. medial
    d. lateral



61. There are four more terms you must learn; these are the terms of movement. Abduction is a movement away from the mid-line. Adduction is a movement toward the mid-line. Flexion is the shortening or closing of an angle. Extension is the lengthening or opening of an angle. Label the drawings: Adduction, Abduction, Flexion, Extension. *NOTE TO STUDENT: The arrows on all drawings indicate the direction the arm has moved.*

Answers:

57. bilateral, superior, posterior, lateral
58. bilateral, superior, posterior, lateral
59. c
60. b
61. 1. Abduction, 2. Flexion, 3. Adduction, 4. Extension

62. In placing your left hand over your heart, you moved the tips of your fingers toward the mid-sagittal plane. You could say you (____ adducted, ____ abducted) your fingertips.

63. The person moved toward the middle of the room. A movement toward the mid-line is _____ .

64. When a person is kidnapped, he/she is said to have been abducted. Movement away from the mid-line is _____ .

65. In bringing the hand to the forehead as in the military hand salute, the tips of the fingers are _____ , but the elbow is _____ . (Consider all movement from the normal anatomical position.)

66. When you contract your arm muscles, the angle formed by the arm and forearm is (____ increased, ____ decreased).

A. B. C.

67. Flexion is the closing or decreasing of an angle. Starting with the 90° angle above in figure A, which angle, B or C, is an example of flexion?

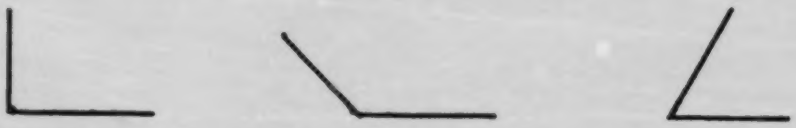
A.

68. Drawing A above depicts _____ .

Answers:

62. adducted
63. adduction
64. abduction
65. adducted, abducted
66. decreased
67. C
68. flexion

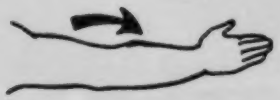
69. Extension is the opening or lengthening of an angle. Beginning with the angle below in A, which angle, B or C, depicts extension?



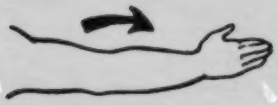
A. B. C.

70. Which drawing below is an example of flexion? (____ both, ____ A, ____ B, ____ neither)

A.

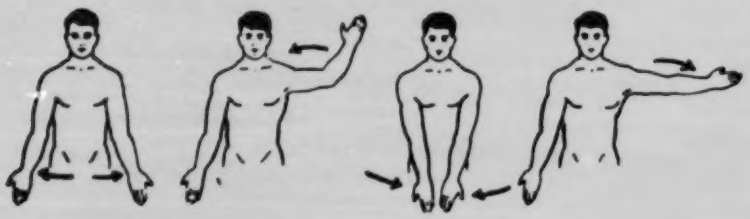
B. 

71. Which drawing is an example of extension? (____ both, ____ A, ____ B, ____ neither)

A. 

B.

72. Label the drawings below as flexion, extension, adduction or abduction.



1. _____ 2. _____ 3. _____ 4. _____

Answers:

69. B
70. neither
71. both
72. 1. abduction, 2. flexion, 3. adduction, 4. extension

73. Medical terminology is made up from Latin and Greek roots, suffixes, and prefixes. Learning these roots, suffixes, and prefixes will enable you to understand and form many medical words. Many medical words are formed using _____ and _____ _____ , _____ and _____.

74. A prefix is a word used to modify the meaning of the word to which it is attached. It is always placed before the word it modifies. For example, prepaid means paid before. The prefix added to paid in this example is _____ .

75. The prefix meaning without is *a* or *an*. Which word or words below mean without something.

a. abrachia
b. anemia
c. abacterial
d. diplogen

76. Abrachia, anemia, abacterial all have a prefix which means _____ .

77. The prefix *a* is used when the root or suffix begins with a consonant. The prefix *an* is used when the root or suffix begins with a vowel. By adding the proper prefix, change each of the following words into a new form that means without.

a. ____ typical
b. ____ symmetrical
c. ____ omaly
d. ____ oxia
e. ____ otia
f. ____ febrile

78. Which word below could mean without arms?

a. gelatinase
b. abrachia

79. Which word below could mean without blood?

a. anemia
b. napex

80. The prefix *ad* means to or at. Drawing *toward* the mid-line is

a. abduction
b. adduction

Answers:

73. Latin, Greek roots, suffixes, prefixes
74. pre
75. a, b, c
76. without
77. a. a, b. a, c. an, d. an, e. an, f. a
78. b
79. a
80. b

81. When one substance sticks to another substance, it is said to

a. adhere b. abort

82. At the mouth would be

a. abnormal b. adoral

83. The prefix meaning without is

a. ad b. a c. an

84. The prefix meaning to or at is

a. ad b. a c. an

85. The prefix meaning before is *ante*. For each of the following, fill in the word that gives the meaning of the prefix.

a. *ante*natal	____ birth
b. *an*esthesia	____ sense of touch or pain
c. *ante*cubital	____ forearm
d. *a*phagia	____ power of swallowing
e. *ad*renal	____ kidney
f. *a*pnea	____ breathing
g. *an*oxia	____ oxygen
h. *ad*neural	____ nerve

86. Before the arm (forearm) is

a. abrachial c. antebrachial
b. anbrachial d. adbrachial

87. Antefebrile would mean

a. after the onset of fever b. before the onset of fever

88. *Epi, inter,* and *intra* are three words with similar meanings. They are sometimes difficult to separate. *Epi* means on or upon, *inter* means between, and *intra* means within. Upon the spine is

a. interspinal b. intraspinal c. epispinal

Answers:

81. a
82. b
83. b,c
84. a
85. a. before, b. without, c. before, d. without, e. to the (at the), f. without, g. without, h. to the (at the)
86. c
87. b
88. c

89. Epicostal means

    a. within a rib b. upon a rib c. between the ribs

90. *Inter* and *intra* are the ones most easily mixed up. *Inter* and enter sound alike; when you enter a gate, you walk between the posts. Between the ribs is

    a. intercostal b. intracostal c. epicostal

91. Upon the skin is ____ while between two or more cartilages would be ____ .

    a. interchondral
    b. epidermal

92. *Intra* means within. Within the skull is ____ and upon the skull is ____ .

    a. epicranium b. intracranial

93. Fill in the blanks with the correct prefix to match each meaning.

    a. _____ cardium — upon the heart
    b. _____ venous — within the vein
    c. _____ costal —upon the rib
    d. _____ cellular — between the cells
    e. _____ cellular — within the cells
    f. _____ muscular — between muscles

94. *Erythr/o* means red. A common word is erythrocyte, meaning _____ blood cell.

95. The abbreviation RBC is frequently used for red blood cell. A red blood cell, then, may be either abbreviated RBC or written _____ cyte.

96. Erythrocyte may be abbreviated _____ or written out as _____ blood cell.

97. *Leuk/o* and *leuc/o* means white. A leukocyte is a _____ blood cell.

98. An abbreviation, WBC, may also be used instead of the prefix-root combination. WBC or _____ cyte means _____ .

99. White blood cell may be abbreviated as _____ or written as _____ cyte.

Answers:

89. b
90. a
91. b, a
92. b, a
93. a. epi, b. intra, c. epi, d. inter, e. intra, f. inter
94. red
95. erythro
96. RBC, red
97. white
98. leuko, white
99. WBC, leuko

100. You have seen that some prefixes end with the letter *o* as in *leuk/o* or *erythr/o*. Here is the rule for using such prefixes: Add the *o* when the root or suffix begins with a consonant; drop the *o* when the root or suffix begins with a vowel. Complete the words below by adding *a* or *an* where needed and by retaining or dropping the *o* in *erythr/o* and *leuk/o*.

a. leuk ____ cyte
b. erythr ____ emia
c. erythro ____ cyte
d. (a) (an) emic
e. (a) (an) symmetrical
f. (a) (an) brachi

101. Complete the words below using the prefixes you have learned.

a. _____ costal — between the ribs
b. _____ sexual — without sex
c. _____ blast — red forming cell
d. _____ neural — upon the nerve
e. _____ emia — white blood disease
f. _____ cranial — within the skull
g. _____ renal — to the kidney
h. _____ emia — without blood
i. _____ brachium — before the arm

102. Intracranial and endocranial mean the same (inside or within). Inside the skull is _____ or _____

a. intracranial
b. endocranial
c. epicranial

103. Endoscopy means a visual examination

a. within
b. inside
c. upon
d. between

104. Match the items in column A with the correct meaning in column B.

A	B
1. intercostal ____	a. upon the skin
2. intracranial ____	b. within the skull
3. epidermis ____	c. inside the heart
4. endocardial ____	d. between the ribs

NOTE TO STUDENT: Although Intra is Latin and Endo is Greek, both meaning within, Intra is usually used to mean within or among while Endo denotes inside or inner.

Answers:

100. a. leukocyte, b. erythremia, c. erythrocyte, d. anemic, e. asymmetrical, f. abrachi
101. a. inter, b. a, c. erythro, d. epi, e. leuk, f. intra, g. ad, h. an, i. ante
102. a, b
103. a, b
104. 1. d, 2. b, 3. a, 4. c

105. *Peri* means around, *retro* means behind. Around the heart is

a. retrocardial
b. pericardial

106. Retronasal means

a. behind the nose
b. upon the nose
c. around the nose

107. Perirectal means _____ the rectum, while retro-ocular means _____ the eye.

108. A country that is retrogressive may soon be (____ ahead, ____ behind) a similar country that is progressive.

109. An inflammation around the brain is

a. retropharyngitis
b. periencephalitis
c. endocarditis

110. Label the items "around" or "behind" as applicable.

a. retrorectal _____
b. periapical _____
c. peribronchial _____
d. retrodural _____

111. *Bi* means two. Bicuspid means _____ cusps.

112. To section means to cut. Cutting into two parts would be _____ .

113. The bicep muscle has _____ heads.

114. *Bio* is a prefix meaning life. A study of life is

a. hematology
b. neurology
c. biology

115. Biogenous means

a. producing disease
b. producing life
c. producing death

Answers:
105. b
106. a
107. around, behind
108. behind
109. b
110. a. behind, b. around, c. around, d. behind
111. two
112. bisection
113. two
114. c
115. b

116. An examination to determine if life is still present would be

a. endoscopy b. bioscopy

117. *Hem/o* or *hemat* means blood. Hematology is a study of _____ .

118. *Stasis* means standing still. Blood that is standing still would be in a condition of _____ stasis.

119. A hemocytoblast is a _____ forming cell.

120. *Hyper* and *hypo* are two prefixes. *Hyper* means above or an excess; *hypo* then means the opposite, or

a. above or excess c. below or deficient
b. normal

121. Hypertension describes a person who has

a. more tension than normal
b. less tension than normal
c. normal tension

122. Hypothermia refers to temperature that is

a. above normal b. below normal

123. Indicate the meaning of the following words by placing the letter "A" for above and "B" for below, before each word.

a. ____ hyperacute c. ____ hypochondriac e. ____ hypomorph
b. ____ hyperacid d. ____ hyperalgia f. ____ hypotension

124. *Sub* is a prefix meaning under. Subcostal would mean _____ the ribs.

125. Glossal refers to the tongue. Under the tongue would be _____ .

126. Under the shoulder blade would be _____ scapular.

127. *Pneum/o* means air, breath or lung. Pneumonitis is an inflammation of the _____ .

Answers:

116. b
117. blood
118. hemo
119. blood
120. c
121. a
122. b
123. a. A, b. A, c. B, d. A, e. B, f. B
124. under
125. subglossal
126. sub
127. lung

128. Pneumothorax means there is_____ in the chest.

129. *Ectomy* refers to the surgical removal of a part. Removal of a lung would be a _____ ectomy.

130. Listed below are medical words without their prefixes. Add the prefix to make each word mean what the lay term indicates.

a. _____ brachia — without arms
b. _____ renal — to the kidney
c. _____ gastric — upon the stomach
d. _____ costal — between the ribs
e. _____ cyte — white blood cell
f. _____ uria — without urine
g. _____ cranial — within the skull
h. _____ cardial — around the heart
i. _____ cervical — behnd the cervix uteri
j. _____ cardial — inside the heart
k. _____ logy — study of life
l. _____ section — cut in two
m. _____ logy — a study of blood
n. _____ tension — over tensed
o. _____ dermic —beneath the skin
p. _____ hepatic — under the liver
q. _____ onitis — inflammation of the lung
r. _____ cyte — red blood cell
s. _____ partum — before childbirth

Check the confirmation. Any words you missed or had difficulty with, review before going on.

131. Periosteum means

a. behind the bone
b. upon the bone
c. around the bone
d. within the bone

132. Within the cartilage is

a. perichondrial
b. interchondral
c. intrachondrial

133. Epicardial means

a. within the heart
b. upon the heart
c. around the heart

Answers:

128. air
129. pneum
130. a. a, b. ad, c. epi, d. inter, e. leuko, f. an, g. intra, h. peri, i. retro, j. endo, k. bio, l. bi, m. hemato, n. hyper, o. hypo, p. sub, q. pneum, r. erythro, s. ante
131. c
132. c
133. b

134. Pericardial means

a. around the heart
b. upon the heart
c. inside the heart

135. Inside the heart is _____ or _____ .

a. intracardial
b. pericardial
c. epicardial
d. endocardial

136. Retrocardiac means

a. below the heart
b. above the heart
c. within the heart
d. behind the heart

137. Cost is the medical term for rib. Upon the ribs is

a. epicostal
b. intracostal

138. Between the ribs is

a. intercostal
b. intracostal

139. A form referring to the inner surface of the ribs would be

a. epicostal
b. intercostal
c. intracostal

140. *Cyte* is the suffix meaning cell. The most commonly used words employing "cyte" are "leukocyte" and "erythrocyte." These words mean (select two)

a. bone cells
b. red cells
c. white cells
d. muscle cells

141. A red blood cell having no hemoglobin is called a/an

a. alymphocyte
b. anerythrocyte

142. Intraleukocytic means

a. upon a leukocyte
b. inside a leukocyte
c. within a leukocyte
d. below a leukocyte

Answers:
134. a
135. a,d
136. d
137. a
138. a
139. c
140. b,c
141. b
142. b,c

143. *Myo* is the medical term for muscle. Myocardium is a/an

a. arm muscle
b. neck muscle
c. heart muscle
d. head muscle

144. A cell of the muscular tissue is called

a. myocardium
b. myocyte

145. *Ren* and *nephr* both mean kidney. Nephr is used most often. Which of the words below pertain to the kidney or heart? (____ both, ____ a, ____ b, ____ neither)

a. nephrocardiac
b. renicardiac

146. The most common form for kidney is

a. ren
b. nephr

147. Intrarenal means

a. within the kidney
b. inside the kidney
c. upon the kidney

148. Around the kidney is

a. peribrachial
b. pericostal
c. perirenal
d. pericardial

149. Endo*nephr*itis, *ren*al, intra*renal,* peri*renal, nephr*ectomy
Looking at the words above, select the correct statement or statements that tell how and when *ren* and *nephro* are used.

a. *Ren* is always used as a word ending.
b. *Nephr* is always used as a word beginning.
c. *Ren* is never used as a word beginning.
d. *Nephr* is never used as a word ending.
e. *Ren* is usually used as a word ending with the suffix al.

150. *Oste* is the medical term for bone. Removing a bone is accomplished through a/an

a. cardiectomy
b. pneumonectomy
c. nephrectomy
d. ostectomy

Answers:

143. c
144. b
145. both
146. b
147. a and b
148. c
149. d,e
150. d

151. Ostealgia would be a

a. headache
b. pain in the arm
c. pain in the bone
d. pain in the neck

152. Osteopathy is a

a. disease of the skin
b. disease of the arm
c. disease of the bone

153. *Neuro* is the medical term for nerve. A neurocyte would be a

a. muscle cell
b. blood cell
c. clotting cell
d. nerve cell

154. Within a nerve is

a. subneural
b. adneural
c. endoneural
d. epineural

155. Subneural means

a. around an arm
b. upon a nerve
c. upon an arm
d. under a nerve

156. *Thrombo* is the medical term for clot. A thrombocyte is a blood platelet or

a. red cell
b. white cell
c. clotting cell

157. A blood clot within the heart is

a. thromboendarteritis
b. thrombocytopenia
c. thromboembolism
d. thromboendocarditis

158. Producing a clot is

a. thrombogenic
b. thrombocyte

Answers:

151. c
152. c
153. d
154. c
155. d
156. c
157. d
158. a

159. You have learned many words. To help you retain this knowledge, the next four frames consist of a review. Column A contains medical terminology and Column B contains lay terminology. Match the medical term with the correct lay term.

A	B
1. extension _____	a. a study of the functions of the body
2. anatomy _____	b. an imaginary plane which divides the body into equal right and left halves
3. physiology _____	
4. normal anatomical position _____	c. an imaginary plane which divides the body into a front and back section.
5. mid-sagittal plane _____	
6. transverse plane _____	d. a study of the structures of the body
7. coronal plane _____	e. movement toward the mid-line
8. abduction _____	f. lengthening of an angle
9. adduction _____	g. movement away from the mid-line
10. flexion _____	h. the position of attention with the palms facing forward
	i. the shortening of an angle
	j. an imaginary plane which divides the body into a top and bottom section

160. Continue as in the preceding frame.

A	B
1. medial _____	a. above the transverse plane
2. lateral _____	b. in front of the coronal plane
3. superior _____	c. closest to the point of origin
4. inferior _____	d. pertaining to or affecting but one side
5. anterior _____	e. pertaining to or affecting both sides
6. posterior _____	f. nearest to the mid-line
7. proximal _____	g. farthest from the point of origin
8. distal _____	h. below the transverse plane
9. unilateral _____	i. in back of the coronal plane
10. bilateral _____	j. farthest from the mid-line

Answers:

159. 1. f, 2. d, 3. a, 4. h, 5. b, 6. j, 7. c, 8. g, 9. e, 10, i
160. 1. f, 2. j, 3. a, 4. h, 5. b, 6. i, 7. c, 8. g, 9. d, 10. e

161. Continue as in the preceding frame.

A	B
1. abrachial _____	a. situated upon a rib
2. anerythrocyte _____	b. red blood cell
3. adneural _____	c. within the heart
4. epicostal _____	d. white blood cell
5. erythrocyte _____	e. around the kidney
6. interrenal _____	f. without red cells
7. leukocyte _____	g. to a nerve
8. intracardiac _____	h. behind the heart
9. perinephric _____	i. without arms
10. retrocardiac _____	j. between the kidneys

162. Continue as in the preceding frame.

A	B
1. endocardial _____	a. destructive to living organisms
2. bilateral _____	b. excess in the number of white blood cells
3. biocidal _____	c. under the rib
4. hematology _____	d. pertaining to the heart and lungs
5. hyperleukocytosis _____	e. inside the heart
6. hypoleukocytosis _____	f. a nerve cell
7. subcostal _____	g. deficiency of white blood cells
8. pneumocardial _____	h. a blood platelet (clotting cell)
9. neurocyte _____	i. a study of blood
10. thrombocyte _____	j. pertaining to both sides

163. *Hepat* is a root meaning liver. A patient with an inflamed liver would have

a. neuritis
b. hepatitis
c. carditis
d. nephritis

164. Any disease of the liver would be

a. hepatopathy
b. osteopathy

Answers:

161. 1. i, 2. f, 3. g, 4. a, 5. b, 6. j, 7. d, 8. c, 9. e, 10. h
162. 1. e, 2. j, 3. a, 4. i, 5. b, 6. g, 7. c, 8. d, 9. f, 10. h
163. b
164. a

165. A removal of a portion of the liver would require a

a. hepatopathy
b. cardiectomy
c. hepatectomy
d. ostectomy

166. *Cephal* means head. Medically speaking, if you had a headache you would have

a. neuralgia
b. cardialgia
c. cephalalgia
d. myalgia

167. Any disease of the head would be classified as

a. cephalopathy
b. hepatitis
c. neurology
d. osteopathy

168. A headless body would be

a. bicephalus
b. acephalia

169. *Chondri* is a root meaning cartilage. Under the cartilage is

a. hypochondrium
b. hypochondroplasia
c. intrachondrial
d. subchondral

170. A cartilage cell is a

a. chondralgia
b. chondrocyte
c. chondroblast
d. chondritis

171. Cartilage is formed through a process called

a. myogenesis
b. osteogenesis
c. neurogenesis
d. chondrogenesis

172. The root form for stomach is *gastr.* An inflammation of the stomach is

a. nephritis
b. gastritis
c. cephalitis
d. neuritis

173. A word which means pertaining to the heart and stomach is

a. gastroachephalus
b. gastrocardiac
c. gastrohepatic
d. gastronephritis

Answers:
165. c
166. c
167. a
168. b
169. d
170. b
171. d
172. b
173. b

174. Which word means an inflammation of the stomach and kidney?

a. gastrointestinal
b. gastrologist
c. gastronephritis
d. gastrohepatitis

175. *Arter* means artery. Arteriorenal would be an ____ of the ____

176. Arteritis would be an inflammation of the ____.

177. *Stenosis* means narrowing. Arteriostenosis means a narrowing of the ____.

178. *Crani* means Skull. A craniectomy would be a surgical ____ of the ____.

179. *Crani* or *cranium* means ____.

180. *Pathy* means disease. A craniopathy would be a ____ of the ____.

181. *Derma* or *dermat/o* means skin; *neur/o* means nerve; *logy* means a study of. Dermatoneurology refers to a ____ of the ____ and the ____.

182. *Itis* means an inflamed condition or inflammation. Dermatitis refers to an ____ of the____.

183. Under the skin is

a. intradermic
b. hypodermic
c. subdermic
d. epidermic

184. *Aden* is a root meaning gland. A gland can be removed by a/an

a. neurectomy
b. adenectomy
c. arterectomy
d. nephrectomy

185. An inflammation of the tissues around a gland would be

a. pericarditis
b. periarteritis
c. periadenitis
d. periangiitis

186. A condition of enlarged glands would be

a. hyperadenosis
b. hypoademia

174. c
175. artery, kidney
176. arteries
177. arteries
178. removal, skull
179. skull
180. disease, skull
181. study, nerves, skin
182. inflammation, skin
183. b and c
184. b
185. c
186. a

187. The medical root meaning fat is *adip*. The condition of a person who is extremely fat is described as

a. hyperalgesia
b. hyperalgia
c. hyperadiposis
d. hyperadenosis

188. A neurotic state in which there are painful areas of fat is

a. neuralgia
b. adipositis
c. neuritis
d. adiposalgia

189. Inflammation of the fatty tissue is called

a. neuritis
b. adipositis
c. nephritis
d. carditis

190. Producing fat or fatness is

a. cytogenic
b. myogenic
c. adipogenic
d. ovigenic

191. A *duct* is a tube or passage. An egg tube would be an

a. ovicapsule
b. oviferous
c. oviform
d. oviduct

192. A gland having no excretory passage would be a ____ less gland.

193. Either tube or passage is meant by the stem

a. duct
b. ovi
c. nephro
d. osteo

194. Time for a review. The words in Column A are lay terms. The words in column B are medical terms. Match the lay terms to the medical terms.

A	B
1. an inflammation of the liver	a. hypochondrial
2. without a head	b. intra-arterial
3. below the cartilage	c. perigastrium
4. around the stomach	d. hepatitis
5. within the artery	e. acephalic

Answers:

187. c
188. d
189. b
190. c
191. d
192. ductless
193. a
194. 1. d, 2. e, 3. a, 4. c, 5. b

195. Complete the next five words as in the last frame.

A	B
1. egg passage ____	a. adipose
2. fat ____	b. cranium
3. inflamed skin ____	c. adrenal
4. skull ____	d. dermatitis
5. gland ____	e. oviduct

196. *Ophthalm* is a root meaning eye. An eye is surgically removed by a/an

a. otectomy
b. myectomy
c. nephrectomy
d. ophthalmectomy

197. An inflammation of the eye is

a. ophthalmitis
b. neuritis
c. nephritis
d. carditis

198. The study of the eye is called

a. neurology
b. hematology
b. gastrology
d. ophthalmology

199. *Ot* is a root word meaning ear. A visual examination of the ear is a/an

a. endoscopy
b. otoscopy

200. A pain in the ear is

a. neuralgia
b. myalgia
c. otalgia
d. nephralgia

201. Any disease of the ear is called

a. ophthalmopathy
b. myopathy
c. neuropathy
d. otopathy

202. *Ov* is the root word for egg. An egg tube is a/an

a. oviduct
b. oviferous
c. ovigenesis
d. ovination

Answers:

195. 1. e, 2. a, 3. d, 4. b, 5. c
196. d
197. a
198. d
199. b
200. c
201. d
202. a

203. To bear eggs would be

a. otogenous
b. oviferous

204. An egg cell is an

a. ovigerm
b. ovocyte
c. oviform

205. *Vas* is the root word meaning vessel. Any nerve and vessel disease would be

a. vasalgia
b. neuropathy
c. vasorrhaphy
d. vasoneuropathy

206. A pain in a vessel is

b. neuralgia
b. vasalgia
c. myalgia
d. nephralgia

207. Any nerve and blood vessel disease is called

a. vasoneuropathy
b. nephropathy
c. myoneurosis
d. pneumonopathy

208. *Cyst* is the root word meaning bladder. Within the bladder is

a. acystic
b. intracystic
c. pericystic
d. epicystic

209. An inflammation inside the bladder is

a. epicystitis
b. pericystitis
c. endocystitis
d. hypocytosis

210. Inflammation of tissues around the bladder is called

a. cystitis
b. pericystitis
c. epicystitis
d. pericarditis

Answers:

203. b
204. b
205. d
206. b
207. a
208. b
209. c
210. b

211. The next group of frames is a review of all the words you have learned. Match the lay term of column A with the medical term of column B. After completing this frame check your answers.

A	B
1. the study of the structures of the human body ____	a. normal anatomical position
2. the study of the functions of the human body ____	b. coronal plane
3. the position of attention with the palms facing forward ____	c. medial
4. the plane that divides the body into top and bottom sections ____	d. transverse plane
5. the plane which divides the body into front and back sections ____	e. lateral
6. the plane which divides the body into equal right and left halves ____	f. mid-sagittal plane
7. closest to the mid-sagittal plane ____	g. anatomy
8. farthest from the mid-sagittal plane ____	h. physiology

212. Correct any errors and continue with problem 212. Look at the phrases in column A below. Fill in the blanks with the proper word from column B.

A	B
1. above the transverse plane ____	a. inferior
2. below the transverse plane ____	b. proximal
3. in front of coronal plane ____	c. posterior
4. in back of coronal plane ____	d. unilateral
5. closest to the point of origin ____	e. superior
6. farthest from the point of origin ____	f. bilateral
7. affecting one side of the body ____	g. distal
8. affecting both sides of the body ____	h. anterior

Answers:

211. 1. g, 2. h, 3. a, 4. d, 5. b, 6. f, 7. c, 8. e
212. 1. e, 2. a, 3. h, 4. c, 5. b, 6. g, 7. d, 8. f

213. Correct any errors and continue with the next series.

A	B
1. movement from or away from mid-line ____	a. acephalic
2. movement to or toward mid-line ____	b. epicostal
3. shortening of an angle ____	c. adduction
4. lengthening of an angle ____	d. adoral
5. without a head ____	e. anemia
6. without blood ____	f. flexion
7. to the mouth ____	g. abduction
8. upon a rib ____	h. extension

214. Correct any errors and continue with the next series.

A	B
1. red blood cell ____	a. leukocyte
2. between the ribs ____	b. pericardium
3. white blood cell ____	c. retronasal
4. within the skull ____	d. intercostal
5. a membranous sac around the heart ____	e. endoneurium
6. behind the nose ____	f. bisection
7. inside the nerve ____	g. erythrocyte
8. cut in two ____	h. intracranium

215. Correct any errors and continue with the next series

A	B
1. a study of life ____	a. hypodermic
2. a study of blood ____	b. pneumectomy
3. extreme fatness ____	c. antebrachium
4. administered below the skin ____	d. biology
5. under the liver ____	e. myocardium
6. a surgical removal of a lung ____	f. hematology
7. forearm ____	g. sub-hepatic
8. a heart muscle ____	h. hyperadioposis

Answers:

213. 1. g, 2. c, 3. f, 4. h, 5. a, 6. e, 7. d, 8. b
214. 1. g, 2. d, 3. a, 4. h, 5. b, 6. c, 7. e, 8. f
215. 1. d, 2. f, 3. h, 4. a, 5. g, 6. b, 7. c, 8. e

216. Correct any errors and continue with the next series.

A	B
1. under the ribs ____	a. myocyte
2. muscle cell ____	b. osteopathy
3. surgical removal of a kidney ____	c. neuritis
4. bone disease ____	d. hepatitis
5. pertaining to the kidneys and heart ____	e. thrombocyte
6. inflammation of the nerves ____	f. subcostal
7. blood clotting cell ____	g. nephrectomy
8. inflammation of the liver ____	h. renicardiac

217. Correct any errors and continue with the next series.

A	B
1. without a head ____	a. hypochondrial
2. below the cartilage ____	b. arteriology
3. behind the stomach ____	c. intracranial
4. a study of the arteries ____	d. adenitis
5. within the skull ____	e. adiposis
6. inflammation under the tongue ____	f. acephalic
7. inflammation of a gland ____	g. subglossitis
8. condition of being fat ____	h. retrogastric

218. Correct any errors and continue with the next series.

A	B
1. egg tube ____	a. ophthalmectomy
2. the surgical removal of an eye ____	b. oviform
3. pain in the ear ____	c. vasalgia
4. egg-shaped ____	d. oviduct
5. pain in the vessels ____	e. cystectomy
6. removal of a bladder ____	f. otalgia

219. *Blast* is a word suffix (ending) meaning forming cell. A red forming cell is a/an

a. leukocyte
b. erythroblast
c. leukoblast
d. erythrocyte

Answers:

216. 1. f, 2. a, 3. g, 4. b, 5. h, 6. c, 7. e, 8. d
217. 1.f, 2. a, 3. h, 4. b, 5. c, 6. g, 7. d, 8. e
218. 1. d, 2. a, 3. f, 4. b, 5. c, 6. e
219. b

220. Muscle tissue is formed from a

a. neuroblast
b. thromboblast
c. myoblast
d. osteoblast

221. A white forming cell is a/an

a. leukocyte
b. erythroblast
c. leukoblast
d. nephrectomy

222. *Ectomy* attached to a word means a surgical removal of that part. A surgical removal of the liver would be a

a. hepatectomy
b. hepatotomy

223. Removing a part of the heart is accomplished through a

a. carditis
b. cardiotomy
c. cardiectomy
d. cardiataxia

224. A kidney is removed through a

a. hepatectomy
b. nephrectomy
c. arterectomy
d. vasectomy

225. *Hemat* was the prefix meaning blood; *emia* is the suffix meaning condition of the _____.

226. The word which means a person is deficient or without blood is

a. erythrocyte
b. hypoleukocytosis
c. hyperleukocytosis
d. anemia

227. A condition of the white blood cells is called

a. erythremia
b. leukemia

228. *Itis* is a suffix meaning inflammation. Inflammation of the nerves is

a. hepatitis
b. nephritis
c. neuritis
d. carditis

Answers:

220. c
221. c
222. a
223. c
224. b
225. blood
226. d
227. b
228. c

229. Inflammation of the liver is

a. hepatitis
b. nephritis
c. neuritis
d. carditis

230. An inflamed kidney would be called nephr _____.

231. *Logy* is a suffix meaning a study of. A study of the blood is

a. cardiology
b. hematology
c. nephrology
d. myology

232. A study of the nerves would be called neuro _____.

233. Myology is a _____ of the _____.

234. *Pathy* is the suffix meaning disease. A disease of the eye would be

a. otopathy
b. myopathy
c. cardiopathy
d. ophthalmopathy

235. Any disease of the bone is called

a. osteitis
b. ostalgia
c. osteopathy
d. ostectomy

236. A study of disease is called

a. pathology
b. myology

237. A condition is indicated by the suffix *osis*. A nerve condition is

a. neuritis
b. neurosis
c. neurectomy

238. A condition of a heart muscle would be

a. myocardium
b. myocardosis
c. myocardial
d. myocele

Answers:

229. a
230. itis
231. b
232. logy
233. study, muscle
234. d
235. c
236. a
237. b
238. b

239. *Scopy* means a visual examination of. A visual examination inside a part is performed by a/an

a. episcopy
b. endoscopy
c. periscopy
d. dermatoscopy

240. A visual examination of the eye is performed by a/an

a. otoscopy
b. cardioscopy
c. ophthalmoscopy

241. The suffix _____ is used to indicate a visual examination.

242. *Stasis* is a suffix meaning stoppage or standing still. A stoppage of blood is called

a. hemostasis
b. intestinal stasis
c. ileal stasis

243. Stoppage of the flow of fluid from the kidneys is

a. hemostasis
b. urine stasis

244. When the eyes are fixed in one place it is called

a. hemostasis
b. venous stasis
c. ophthalmostasis

245. To the words below add the appropriate ending. Review any items you miss.

a. erythro_____ red forming cell
b. aden_____ surgical removal of a gland
c. leuk_____ condition of white blood cells
d. neur_____ inflammation of a nerve
e. hemato_____ study of blood
f. osteo_____ bone disease
g. nephr_____ condition of the kidney
h. endo_____ visual examination inside
i. hemo_____ standing or stopped blood

246. *Tomy* means surgical incision. A surgical incision into a bladder is a

a. cystotomy
b. myotomy

Answers:

239. b
240. c
241. scopy
242. a
243. b
244. c
245. a. blast, b. ectomy, c. emia, d. itis, e. logy, f. path, g. osis, h. scopy, i. stasis
246. a

247. There are three word endings which, when used, place the word in a class, i.e., noun, adjective, past participle. There is a fourth word ending which indicates pertaining to. These word endings are as follows:

Noun — *um* or *ium*. For a word not ending with a vowel, use *ium*. If the word ends with a vowel, use *um*.

Adjective — *al*

Past participle — *ion*

Pertaining to — *ac*

Remember the word *noun* ends in un, so you add _____or _____.

248. Make nouns from the following words by adding the correct suffix to each.

cardi _____ gastri _____ chondri _____

249. To form a noun, you add _____or _____

250. An adjective describes something and is formed by adding al. Make the following words adjectives.

cardi _____ ren _____ brachi _____

251. An adjective is formed by adding _____.

252. The past participle is formed by adding ion; it indicates something that has already happened. Make the following words past participles.

adduct _____ flex _____ abduct _____

253. Past participles are formed by adding _____.

254. Pertaining to is denoted by *ac*. Make each of the following words mean "pertaining to."

cardi _____ chondri _____ brachi _____

255. The suffix meaning pertaining to is _____.

Answers:
247. um, ium
248. cardium, gastrium, chondrium
249. um, ium
250. cardial, renal, brachial
251. al
252. adduction, flexion, abduction
253. ion
254. cardiac, chondriac, brachiac
255. ac

256. Complete the following, adding the ending called for

a.	cardi _____	noun
b.	brachi _____	adjective
c.	gastr _____	noun
d.	ren _____	adjective
e.	chondri _____	pertaining to
f.	flex _____	past participle
g.	cardi _____	pertaining to
h.	adduct _____	past participle

257. *Ante* is a prefix meaning before. The forearm is also called the

a. antecardium
b. antefebrile
c. antenatal
d. antebrachium

258. Before the heart would be

a. antebrachium
b. ante cibum
c. antecardium

259. If mortem means death, before death is _____mortem.

260. *Gen* means to produce. Producing eggs is

a. oviduct
b. oviform
c. ovigenetic

261. The word below that means producing life is

a. biochemistry
b. biology
c. biocidal
d. biogenous

262. Producing cells is called

a. cytogenous
b. erythrocyte
c. myocyte
d. cytoglobin

263. *Algia* is a suffix meaning pain. A headache would be

a. neuralgia
b. cephalgia
c. adenalgia
d. gastralgia

256. a. um, b. al, c. ium, d. al, e. ac, f. ion, g. ac, h. ion
257. d
258. c
259. ante
260. c
261. d
262. a
263. b

264. Nerve pain is

a. neuritis
b. neurosis
c. neuralgia
d. neurology

265. Painful glands might be described as

a. adenalgia
b. adenitis
c. adenosis
d. adenology

266. The following is a review of all the words you have learned. You should be able to translate all the medical terminology into lay terminology with little difficulty. Review any words with which you have difficulty. When you complete this program, your instructor will give you additional instructions. Match the terminology in column A with the lay term in column B.

A	B
1. erythroblastosis _____	a. excessive blood
2. gastronomy _____	b. inflammation of the skin with redness
3. hyperemia _____	c. a condition of forming red cells
4. pericardectomy _____	d. a condition of the cartilage and bone
5. osteochondrosis _____	e. forming blood cells
6. erythrodermatitis _____	f. surgical removal of the sac around the heart
7. hematocytoblast _____	g. cutting the stomach

267. Continue with the following words.

A	B
1. hypochondrium _____	a. pertaining to the lungs and the heart
2. subdermal _____	b. pertaining to the arms and head
3. pneumocardial _____	c. under the cartilage (ribs)
4. periophthalmitis _____	d. not originating in the liver
5. brachiocephalic _____	e. an inflammation of the tissues around the eye
6. anhepatogenic _____	f. a condition in which the blood does not clot
7. athrombosis _____	g. under the skin

Answers:

264. c
265. a
266. 1. c, 2. g, 3. a, 4. f, 5. d, 6. b, 7. e
267. 1. c, 2. g, 3. a, 4. e, 5. b, 6. d, 7. f

268. Continue with the following words.

A	B
1. endoneural ____	a. inflammation of both eyes
2. perinephritis ____	b. study of life
3. retro-ocular ____	c. inflammation of the sac around the kidney
4. bilateral ophthalmitis ____	d. beneath the liver
5. biology ____	e. situated within a nerve
6. subhepatic ____	f. standing blood
7. hepatoscopy ____	g. examination of the liver
8. hemostasis ____	h. behind the eye

269. Continue with the following words.

A	B
1. thrombocyte ____	a. a condition of fat
2. adduction ____	b. inflammation of the structures above the bladder
3. adiposis ____	c. within the skull
4. arteriology ____	d. moving toward the mid-line
5. epicystitis ____	e. a condition of the upper layer of skin
6. intracranial ____	f. a cell that helps form a clot
7. epidermosis ____	g. a study of the arteries

270. Continue with the following words.

A	B
1. anatomy____	a. position of attention with palms facing outward
2. physiology____	b. imaginary plane that divides body into front and back sections
3. normal anatomical position____	c. imaginary plane that divides body into upper and lower sections
4. mid-sagittal plane____	d. study of functions of body
5. transverse plane____	e. imaginary plane that divides the body into equal right and left sections
6. coronal plane____	f. study of structures of the body

Answers:

268. 1. e, 2. c, 3. h, 4. a, 5. b, 6. d, 7. g, 8. f
269. 1. f, 2. d, 3. a, 4. g, 5. b, 6. c, 7. e
270. 1. f, 2. d, 3. a, 4. e, 5. c, 6. b

271. Continue with the following words.

A	B
1. leukocytology _____	a. an egg-conveying tube
2. intercostal _____	b. a study of white blood cells
3. oviduct _____	c. the surgical removal of a bladder
4. otitis _____	d. inflammation of the ear
5. vasotomy _____	e. before the arm (forearm)
6. cystectomy _____	f. cutting of a vessel
7. antebrachium _____	g. between the ribs

272. Continue with the following words.

A	B
1. medial _____	a. above the transverse plane
2. lateral _____	b. closest to point of origin
3. superior _____	c. farthest from the mid-line
4. inferior _____	d. in back of the coronal plane
5. anterior _____	e. below the transverse plane
6. posterior _____	f. closest to the mid-line
7. proximal _____	g. farthest from point of origin
8. distal _____	h. in front of the coronal plane

273. Continue with the following words.

A	B
1. unilateral _____	a. movement toward mid-liine
2. bilateral _____	b. closing an angle
3. abduction _____	c. opening an angle
4. adduction _____	d. pertaining to or affecting both sides
5. flexion _____	e. movement from mid-line
6. extension _____	f. pertaining to or affecting one side

Review any words with which you have experienced difficulty.

Answers:

271. 1. b, 2. g, 3. a, 4. d, 5. f, 6. c, 7. e
272. 1. f, 2. c, 3. a, 4. e, 5. h, 6. d, 7. b, 8. g
273. 1. f, 2. d, 3. e, 4. a, 5. b, 6. c

APPENDIX III

EMS ORGANIZATIONS

The Ohio Association of Emergency Medical Services (OAEMS) is an organization which represents EMS personnel. Membership in the OAEMS offers an EMT the opportunity to keep informed on important EMS issues.

OAEMS is a communication network. EMS personnel can gather information from others and in return share their own knowledge. As more members participate, more information can be interchanged throughout the state. The OAEMS is the communication link between the EMS and the state legislature. A membership in OAEMS automatically affiliates each member with the National Association of Emergency Medical Technicians (NAEMT).

OAEMS offers a variety of continuing education programs taught by qualified personnel throughout the state of Ohio. This provides members with an opportunity to participate in programs which may not be available otherwise. Each spring the OAEMS joins the American College of Emergency Physicians (ACEP) and the Emergency Department Nurses Association (EDNA) for an annual combined assembly. This combined assembly is filled with continuing education seminars, equipment demonstrations, emergency vehicle displays, plus opportunities to interact with EMS personnel from across the state.

OAEMS membership entitles each Ohio member to a subscription to ECHO magazine, a quarterly publication. ECHO offers current information about Ohio EMS and excellent articles pertaining to EMS topics authored by doctors, nurses and EMTs.

Membership in a state EMS organization should be considered a necessity. Participating in a professional organization offers an excellent opportunity for professional growth and education. For more information on OAEMS contact OAEMS, Box 6213, Akron Ohio 44312.

NAMES AND ADDRESSES OF ORGANIZATIONS IN OHIO INVOLVED WITH EMERGENCY MEDICAL SERVICES

Ohio Department of Health
Emergency Medical Services
246 N. High Street
Columbus, Ohio 43215
(614) 466-5410

Department of Education
Division of Vocational Education
65 S. Front Street
Columbus, Ohio 43215
(614) 466-9447

Ohio Board of Regents
Vice Chancellor
30 E. Broad Street
Columbus, Ohio 43215
(614) 466-6000

Ohio Department of Transportation
Transportation Safety
25 S. Front Street
Columbus, Ohio 43215
(614) 466-8990

Emergency Medical Services Advisory Council
2825 West Granville Road
Worthington, Ohio 43085
(614) 889-7183

Ohio Association of Emergency Medical Services
P.O. Box 6213
Akron, Ohio 44312

National Registry of Emergency Medical Technicians
P.O. Box 29233
Columbus, Ohio 43229
(614) 888-4484

APPENDIX IV

LEGISLATION

Legislation is a means of dealing with regulations of equipment, training, organization, financing and personal (criminal) liability.

The following is a list of legislation:

1. Ohio Revised Code

*** a. Section 133.01 — Definition of Joint Ambulance District

*** b. Section 307.051 — Boards of Commissioners can enter into contractual agreements to provide ambulance service or emergency medical services. The contract cannot be with a public agency, which receives more than half its operating funds from governmental agencies with the intention of directly competing with other services, unless the public agency presents the lowest and best bid in open bidding competition.

c. Section 313.11 — Notification in case of death by violence or suicide.

d. Section 313.12 — Notification by physician in case of death by violence or suicide.

e. Section 505.37 — Provides for the use of funds raised through a fire levy to be used for the operation of an emergency medical service within the fire department.

f. Section 505.443 — Township trustees can also enter into contracts, for a period not to exceed three years, to obtain ambulance services or emergency medical services.

g. Section 505.45 — Township trustees may send officers or firefighters to schools of instruction.

h. Section 505.71 — Township trustees may enter into an agreement with trustees of other townships for the creation of a joint ambulance district to provide emergency medical service to the involved townships.

i. Section 505.72 — Outlines removal of an employee of a joint ambulance district and appropriate appeal mechanism.

States the guidelines for joint ambulance districts to contract for additional ambulance services of emergency medical services.

Describes the immunity to liability for joint ambulance districts and the entities they might contract with.

*** Denotes the more significant sections of Ohio Revised Code on Emergency Medical Services

j. Section 701.02 — Liability of municipal corporations for operation of vehicles.

k. Section Section 737.21 — Defines authority of a municipal corporation to establish all necessary legislation pertinent to the protection of lives and property from fire and accident.

l. Section 737.23 — Allows municipal authorities to send officers and firefighters to schools of instruction.

m. Section 2151.421 — Requires physicians to file reports with local police officials in all cases of suspected child abuse.

n. Section 2305.23 — Provides that no person, including police and firefighters, shall be held liable for administering emergency care at the scene of an emergency — within certain limits — "Good Samaritan Law."

o. Section 2917.41 — Coroner must be notified when a body bears marks of violence.

p. Section 2915.01 — Permits volunteer rescue services (EMS) to conduct charitable bingo games.

q. Section 2923.08 — No person shall mutilate or destroy any portion of a dead human body.

r. Section 2923.43 — No person shall willfully obstruct, impede, or hamper the operations of a law officer, firefighter, rescue or medical personnel at the scene of emergencies of any kind.

s. Section 4503.172 — Exempts motor vehicles of volunteer rescue services from vehicle registration fees.

t. Section 4511.01 — Permits public safety vehicles to display flashing red lights.

u. Section 4511.03 — Allows driver of an emergency vehicle or public safety vehicle to proceed past a red light or stop sign with due caution and regard for the safety of others using the street.

v. Section 4511.24 — Allows public safety or emergency vehicles to disregard the posted speed limits.

w. Section 4511.45 — Provides the driver of a public safety vehicle with the right of way over other traffic.

x. Section 4511.451 — Provides that only emergency or public safety vehicles may take the right of way over a funeral procession.

y. Section 4511.72 — Limits drivers of non-emergency vehicles to following no closer than five hundred feet to the rear of an emergency or public safety vehicle.

z. Section 4513.21 — Describes the horns, sirens, and warning devices required on an emergency and public safety vehicle.

***aa. Section 4731.82 —

Definition of an EMT-A
Definition of an Advanced EMT-A
Definition of an EMT Paramedic
Definition of an Ambulance

Definition of Emergency Medical Services — "A public or private organization using EMTs, Advanced EMTs or Paramedics, to provide emergency medical care to victims receiving professional and medical care or hospitalization."

Definition of EMS training
Definition of Accrediting Body (for certification of training programs)

bb. Section 4731.83 — Provides for the accreditation of an applicant offering one or more courses in instruction in emergency medical services training pursuant to Section 4731.82 to 4731.90 and 4731.92.

Certificate of accreditation, issued by accrediting authority, is valid for two years.

***cc. Section 4731.84 — Outlines the basic course content for the training of EMTs, Advanced EMT-As, or Paramedics that must be provided in an emergency medical services training course so that it can be accredited. Emphasizes the *requirement* of sufficient physician, or other qualified personnel, input in development and teaching of any course.

***dd. Section 4731.841 — Ambulance driver is not required to be a certified EMT-A, Advanced EMT-A, or EMT-P.

***ee. Section 4731.85 — Defines circumstances under which the Accrediting body may suspend, revoke or cancel accreditation of a training program.

***ff. Section 4731.86 — The requirements that must be fulfilled by a potential EMT-A, Advanced EMT-A, or Paramedic school in order that a certificate of competency will be awarded. EMT-A training programs are accredited by State Board of Education, Advanced EMT-A and EMT-P training programs are accredited by the Board of Regents.

Stipulates that certification must be renewed every three years.

***gg. Section 4731.87 — "Grandfather" clause forEMT-As. "Grandfather" clause for Paramedics.

Allows Accrediting body to enter into reciprocal agreements with other states regarding training.

***hh. Section 4731.871 — "Grandfather" clause for EMT-As trained to Advanced EMT-A level prior to August 31, 1979.

***ii. Section 4731.88 — States that 100 days after the accrediting body has made public standards for issuing certificates of accreditation, no new courses can be offered or certificates of competency warded until said instructor of such course or courses receives a certificate of accreditation from the accrediting body. Courses in process are subject to a "Grandfather" clause.

Directs that the Attorney General, Prosecuting Attorney of the County, City Solicitor, or City Attorney shall prosecute to terminate any persons violating sections of 832 at the request of the accrediting body.

***jj. Section 4731.89 — Authorization that a paramedic can perform the tasks outlined in the laws pursuant to verbal or written direction, or authorization via a direct communications device by a licensed medical doctor or a Doctor of Osteopathic Medicine and Surgery or registered nurse designated by a physician.

Also states that if such communications fail or response make communication impossible that the paramedic can perform such procedures if he or she feels that the life of the patient is in immediate danger.

***kk. Section 4731.891 — Authorizes that an Advanced EMT-A can perform the tasks outlined in the laws pursuant to verbal or written direction, or authorization via a direct communications device by a licensed medical doctor or a Doctor of Osteopathic Medicine and Surgery or registered nurse designated by a physician.

Also states that if such communications fail or response makes a communication impossible that the Advanced EMT-A can perform such procedures if he or she feels that the

life of the patient is in immediate danger.

***ll. Section 4731.90 — No EMT-A, Advanced EMT-A or EMT-P is liable for civil damages for injury, death, or loss to persons or property resulting from administration of emergency medical treatment unless the care or treatment is administered in a willful or wanton manner. No hospital-based licensed doctor or designated registered nurse is liable for civil damages for advising or assisting in emergency care by means of any communication device unless such advice or assistance is given in a willful or wanton manner.

This bill also provides protection from civil liability to political subdivisions, joint ambulance districts or public emergency medical service, and for students in accredited training programs. The Section covers drivers of ambulances and emergency medical service operators from civil liability for damages or death resulting from the proper operation of an emergency ambulance.

***mm. Section 4731.92 — Directs that no persons should represent themselves as an EMT-A, Advanced EMT-A or Paramedic unit until awarded a certificate of competence.

Also no public or private agency shall advertise or lead the public to believe that said agency provides emergency medical service unless said agency provides services as described in the law.

(It states in Section 4731.99 of the law that whoever violates Sections of 4731.92 will be guilty of a minor misdemeanor on the first offense and a misdemeanor of the fourth degree on each subsequent offense.) Said persons would also not be protected by the liability section (4731.90) of the law.

"The Ohio Department of Health, upon application of any affected person or governmental agency, may conduct hearings and publish recommendations concerning the cost effectiveness of any Emergency Medical Service and the desirability of eliminating unnecessary levels of service and to promote sound management practices."

***nn. Section 4731.93 — Explains the makeup, role and duties of the Emergency Medical Services Advisory Council.

Council makeup — nine members.

(1) Physician
(2) Hospital Association
(3) Volunteer Fire and Ambulance emergency medical service
(4) Volunteer rescue emergency medical services other than one operating in conjunction with a Volunteer Fire Service
(5) Public professional emergency medical services
(6) Private emergency medical service
(7) Funeral business or association engaged in ambulance service
(8) Two members of the public who have knowledge and interest in emergency medical services

Duties of EMS Advisory Council

(1) State-wide disaster plan for Emergency Medical services in coordination with the State Disaster Services Advisory Council
(2) Standards for the operation for ambulance and emergency medical services
  (a) Definition and classification of basic and intensive care ambulances

(b) Design equipment and supplies for said ambulances
(c) Minimum number and type of personnel to staff ambulances
(d) Communications systems plan
(e) Ascertain the quantity and quality of ambulance and emergency medical services throughout the State.

***oo. Section 4731.99 — Legal penalties for anyone violating any section of the law.

***pp. Section 5705.01 — Identifies a joint ambulance district as a possible subdivision and/or taxing authority.

***qq. Section 5705.19 — Authorizes property tax levies in excess of the ten mill limitation for:

(1) Fire departments, equipment, and property including ambulances
(2) Emergency medical services operation and equipment

***rr. Section 5739.02 — Exempts sales to non-profit emergency and fire protection agencies from the State sales tax.

***ss. Section 5915.02 — Mandates the creation of a State Disaster Services Agency and outlines duties and responsibilities.

***tt. Section 5915.03 — Mandates the creation of an Advisory Council for said Disaster Services Agency.

Recent Additions to Ohio Revised Code

a. Section 3313.60 — Requires boards of education of county, exempted village, and city school districts to prescribe a graded course of study which includes... (H) First Aid including a training program in Cardiopulmonary Resucitation (CPR) ... (To be implemented by January 1, 1982)

b. Section 4155.15 (A) — On and after January 1, 1981 the operation of an underground mine or strip mine where twenty or more persons are employed on a shift, including all persons working at different locations of the mine within a ten-mile radius, shall provide at least one EMT-A or Adv EMT-A on duty at the mine whenever the employees of the mine are actively working. (Parts B, C, D, E of this section give further details and exceptions.)

c. Sections 4151.25, 4151.26, 4157.61 and 4731.82 are amended to conform to the requirements of Section 4155.15.

D4511.03 Emergency vehicles to proceed cautiously past red or stop signal.

The driver of any emergency vehicle or public safety vehicle, when responding to an emergency call, upon approaching a red or stop signal or any stop sign shall slow down as necessary for safety to traffic, but may proceed cautiously past such red or stop sign or signal with due regard for the safety of all persons using the street or highway.

GLOSSARY OF TERMS

abdomen—(ab-do'men) body area between the diaphragm and pelvis.

absorption—(ab-sorp'shen) passage of a substance through a membrane (for example, skin or mucosa) into blood.

Achilles' tendon—(A-kil'ez ten'don) tendon inserted on calcaneus; so-called because of the Greek myth that Achilles' mother held him by the heels when she dipped him in the river Styx, thereby making him invulnerable except in this area.

acidosis—(as'i-do'sis) condition in which there is an excessive proportion of acid in the blood.

acute—(a'kūt) a term applied to a disease which is attended with more or less violent symptoms and comes speedily to a crisis. Requiring immediate, serious attention.

adduct—(a-dukt') to move toward the midlin , opposite of abduct.

adenoid—(ad'n-oid') literally, glandlike; adenoids or pharyngeal tonsils are paired lymphoid structures in the nasopharynx.

ad'junct—(aj ungkt) joined to a thing or person.

administer—(ad-min'i-ster) to supply or give, as a dose of medicine.

adrenalin—(ad-ren'al-in) one of the secretions of two small glands, called adrenal glands, located just above the kidneys. This secretion, also called epinephrine, and sometimes prepared synthetically, constricts the small blood vessels (arterioles), increases the rate of heart beat, and raises blood pressure. It is called a vasoconstrictor or vasopressor substance.

Advanced Life Support (ALS)—advanced emergency care including all of Basic Life Support plus endotracheal intubation, I.V. insertion, I.V. medication, arrhythmia identification, defibrillation.

Advanced Life Support Services—the advanced care services which may be planned for areawide EMS systems. In addition to all of the basic life support services, ALS includes sophisticated transportation vehicles with full equipment and telemetry staffed by advanced EMTs (paramedics) providing on site, prehospital, and interhospital mobile intensive care, and specialized physician and nursing staffs operating critical care units and emergency departments.

albuminuria—(al-bu'min-nyoor'i-a) albumin in the urine.

alkalosis—(al'ka-lo'sis) condition in which there is an excessive portion of alkali in the blood; opposite of acidosis.

allergic—(a-lur'jik) extremely sensitive to something, such as allergic to penicillin.

alveolus—(al-ve'a-les) literally a small cavity; alveoli of lungs are microscopic sac-like dilations of terminal bronchioles.

ambulance attendant—person employed by an ambulance service to transport patients. Although many may have some level of emergency training, the minimum National Standard for certification as an EMT-A is the 81-hour course.

ambulance service area—a designated geographic area contiguous to other such areas and delineated by county ambulance service response maps for the purpose of ensuring 24 hour availability of emergency medical transport by one or more specified emergency ambulance services.

amino acid—(a-mi'no as'id) amino acids are the structural units from which proteins are built.

amputation—(am'pu-ta'shun) the removal of a limb or other appendage or outgrowth of the body.

anemia—(a-ne'mi-a) deficient number of red blood cells or deficient hemoglobin.

anesthesia—(an-es-the'zha) loss of sensation.

aneurysm—(an'u-rizm) a spindle-shaped or sac-like bulging of the wall of a vein or artery, due to weakening of the wall by disease or an abnormality present at birth.

angina—(an'ji-na) any disease characterized by spasmodic suffocative attacks; for example, angina pectoris and paroxysmal thoracic pain with feeling of suffocation.

angina pectoris—(an'ji-na pek'to-ris) literally means chest pain. A condition in which the heart muscle receives an insufficient blood supply, causing pain in the chest, and often in the left arm and shoulder. Commonly results when the arteries supplying the heart muscle (coronaries) are narrowed by atherosclerosis.

angiocardiography—(an'je-o-kar-de-og'rah-fe) X-ray examination of the heart and great blood vessels that follows the course of an opaque fluid which has been injected into the blood stream.

ankylosis—(an'ke-lo'sis) abnormal immobility of a joint.

anorexia—(an-o-rek'se-ah) lack or loss of appetite for food.

anoxia—(an-ok'se-ah) literally, no oxygen. This condition most frequently occurs when the blood supply to a part of the body is completely cut off. This results in the death of the affected tissue. For example, a specific area of the heart muscle may die when the blood supply (and hence the oxygen supply) has been blocked, as by a clot in the artery supplying that area.

antagonistic muscles—(an-tag'e-nis'tik mus'l) those having opposing actions; for example, muscles that flex the upper arm are antagonists to muscles that extend it.

anterior—(an-ter'i-er) front or ventral; opposite of posterior or dorsal.

antibody, immune body—(an'ti-bod'i, i-mun'bodi) substance produced by the body that destroys or inactivates a specific substance (antigen) that has entered the body; for example, diphtheria antitoxin is the antibody against diphtheria toxin.

anticoagulant—(an'te-ko-ag'u-lant) a drug which delays clotting of the blood. When given in cases of a blood vessel plugged up by a clot, it tends to prevent new clots from forming, or the existing clots from enlarging, but does not dissolve an existing clot. Examples are heparin and coumarin derivatives.

antihypertensive agents—(an'te-hi-per-ten'siv) drugs which are used to lower blood pressure such as ruawolfia, reserpine, veratrum, hydralazine, hexamethonium chloride, and many others.

antiseptic—(an'ti-sep'tik) preventing bacterial growth and multiplication.

antrum—(an'trem) cavity; for example, the antrum of Highmore, the space in each maxillary bone, or the maxillary sinus.

anus—(a'nes) distal end or outlet of rectum.

anxiety—(ang-zi'e-te) a feeling of apprehension, the source of which is unrecognized.

aorta—(a-or'tah) the main trunk artery which receives blood from the lower left chamber of the heart. It originates from the base of the heart, arches up over the heart like a cane handle, and passes down through the chest and abdomen in front of the spine. It gives off many lesser arteries which conduct blood to all parts of the body except the lungs.

aortic arch—(a-or'tik) the part of the aorta or large artery leaving the heart, which curves up like the handle of a cane over the top of the heart.

aortic insufficiency—(a-or'tik) an improper closing of the valve between the aorta and the lower left chamber of the heart admitting a back flow of blood.

aortic valve—(a-or'tik) valve at the junction of the aorta, or large artery, and the lower left chamber of the heart. Formed by three cup-shaped membranes called semilunar valves, it

allows the blood to flow from the heart into the artery and prevents a back flow.

aortography—(a-or-tog'rah-fe) X-ray examination of the aorta (main artery conducting blood from the lower left chamber of the heart to the body) and its main branches. This is made possible by the injection of a dye which is opaque to X-rays.

apex—(a'peks) the blunt rounded end of the heart, directed downward, forward, and to the left.

apnea—(ap-ne'ah) The transcient cessation of the breathing impulse that follows forced breathing.

apoplexy—(ap'o-plek-se) frequently called apoplectic stroke or simply a stroke. A sudden interruption of the blood supply to a part of the brain caused by the obstruction or rupture of an artery. Initially may be manifested by a loss of consciousness, sensation, or voluntary motion, and may leave a part of the body (frequently one side) temporarily or permanently paralyzed.

apprehensive—(ap'ri-hen'siv) inclined to believe, fear or dread; anticipating or in expectation of evil.

Areawide (Regional) EMS System—a health delivery area capable of handling 95% of its medical emergencies. Only highly specialized and limited use services should be obtained outside of the area. The area must contain adequate population and available medical resources to implement and sustain an EMS system operation. At least three major models exist: (1) multiple urbanized communities and their related suburban parts; (2) a metropolitan center and the surrounding rural areas; and (3) metropolitan center and extreme rural-wilderness settings. The models may be interstate or intrastate.

Areawide (Regional) EMS System Planning—the preparation, development, design and establishment of the mechanisms for a system, within the appropriate geographical boundaries, to deliver EMS either by the initial establishment and operations or through expansion and improvement of existing systems and resources.

areolar—(ah-rē'o'lar) pertaining to the colored circle or halo surrounding a central point, such as the part of the iris surrounding the pupil of the eye or surrounding the nipple of the breast.

arrhythmia—(ah-rith'me-ah) an abnormal rhythm of the heart beat.

arterial blood—(a-te're'al) oxygenated blood. The blood is oxygenated in the lungs, passes from the lungs to the left side of the heart via the pulmonary veins. It is then pumped by the left side of the heart into the arteries which carry it to all parts of the body.

arterioles—(ar-te're-ols) the smallest arterial vessels (about 0.2 mm. or 1/125 inch in diameter) resulting from repeated branching of the arteries. They conduct the blood from the arteries to the capillaries.

arteriosclerosis—(ar-te're-o-skle-ro'sis) commonly called hardening of the arteries. This is a generic term which includes a variety of conditions which cause the artery walls to become thick and hard and lose elasticity.

artery—(ar'ter-e) blood vessels which carry blood away from the heart to the various parts of the body. They usually carry oxygenated blood except for the pulmonary artery which carries unoxygenated blood from the heart to the lungs for oxygenation.

arthrosis—(ar-thro'sis) joint or articulation.

articulation—(ar-tik'yoo-la'shen) joint.

ashen grey—(ash-en) resembling the color of ashes. Deadly pale.

asphyxia—(as-fik'si-a) loss of consciousness due to deficient oxygen supply.

aspirate—(as'pe-rat') to remove by suction.

ataxia—(a-tak'si-a) loss of power of muscle coordination.

atherosclerosis—(ath'er-o-skle-ro'sis) a kind of arteriosclerosis in which the inner layer of the artery wall is made thick and irregular by deposits of a fatty substance. These deposits (called atheromata) project above the surface of the inner layer of the artery, and thus decrease the diameter of the internal channel of the vessel.

atrio-ventricular node—(a'tre-o-ven-trik'u-lar) a small mass of special muscular fibers at the base of the wall between the two upper chambers of the heart. It forms the beginning of the Bundle of His which is the only known direct muscular connection between the upper and the lower chambers of the heart. The electrical impulses controlling the rhythm of the heart are generated by the pacemaker, conducted through the muscle fibers of the right upper chamber of the heart to the atrio-ventricular node, and then conducted to the lower chambers of the heart by the Bundle of His.

atrio-ventricular valves—(a'tre-o-ven-trik'u-lar) the two valves, one in each side of the heart, between the upper and lower chamber. The one in the right side of the heart is called the tricuspid valve, and the one in the left side is called the mitral valve.

atrium—(a'tre-um) one of the two upper chambers of the heart. Also called auricle, although this is now generally used to describe only the very tip of the atrium. Right atrium receives unoxygenated blood from the body. Left atrium receives oxygenated blood from lungs. Capacity in adult about 57 cc.

atrophy—(at're-fi) wasting away of tissue; decrease in size of a part.

audible—(a'di-bl) loud enough to be heard.

auricle—(aw're-kl) the upper chamber in each side of the heart. "Atrium" is another term commonly used for this chamber.

auscultation—(aws-kul-ta'shun) the act of listening to sounds within the body, usually with a stethoscope.

autonomic—(o'te-nom'ik) self-governing; independent.

autonomic nervous system—(aw-to-nom'ik) sometimes called involuntary nervous system, it controls tissues not under voluntary control; e.g., glands, heart, and smooth muscles.

axilla—(ak-sil'a) armpit.

barbiturate—(bar-bit'u-rat) a class of drugs which produces a calming effect. A sedative.

Bartholin Glands—(bar-tho'lin) one of the two small bodies on either side of the vaginal orifice.

base station—a radio station installed at a fixed location and used to communicate with mobile stations. A base station may secondarily communicate with other base stations incident to communications with mobile stations.

Basic Life Support (BLS)—the basic maneuvers required to sustain viability of brain and heart in clinically dead patients, i.e., absence of pulse and/or breathing. Includes noncannulating airway control methods such as backward tilt of head, triple airway maneuver (backward tilt of the head, forward displacement of mandible and opening of the mouth), manual clearing of airway; mouth-to-mouth, mouth-to-nose and mouth-to-mask ventilation without tubes; external heart compressions (CPR/ABC).

Basic Life Support Services—the minimal acceptable level of care services available in an areawide EMS system. Services include universal access and central dispatch of approved national standard ambulances, with appropriate medical and communication equipment, operated by a complete complement of EMTs (EMT-A), and availability of a hospital facility staffed by physicians and nurses with emergency medical knowledge and skills.

benzothiadiazine—(ben-zo-thi-ah-di'ah-zin) a drug used to increase the output of urine by the kidney. A diuretic.

biceps—(bi'seps) two headed.

bicuspid valve(bi-kus'pid) usually called mitral valve. A valve of two cusps or triangular segments, located between the upper and lower chamber in the left side of the heart.

biomedical telemetry—the tranamission of biological data, usually an electrocardiogram, from a patient to a monitoring point (base station) by means of radio or wired circuits.

blood pressure—the pressure of the blood in the arteries.

1. Systolic blood pressure—blood pressure when the heart muscle is contracted (systole).
2. Diastolic blood pressure—blood pressure when the heart muscle is relaxed between beats (diastole). Blood pressure is generally expressed by two numbers, as 120/80, the first representing the systolic, and the second, the diastolic pressure.

blue babies—babies having a blueness of skin (cyanosis) caused by insufficient oxygen in the arterial blood. This often indicates a heart defect, but may have other causes such as premature birth or impaired respiration.

bradycardia—(brad-e-kar'de-ah) abnormally slow heart rate. Generally, anything below 60 beats per minute is considered bradycardia.

bromide—(bro'mid) any one of several drugs which produces a calming effect. A sedative.

bronchiole—(bron'ki-ol') small branch of a bronchus.

bronchus—(bron'kes) one of the two branches of the trachea.

buccal—(bul'l) pertaining to the cheek.

Bundle of His—(hiss) also called auriculoventricular bundle, atrio-ventricular bundle, or A-V bundle.A bundle of specialized muscle fibers running from a small mass of muscular fibers (atrio-ventricular node) between the upper chambers of the heart, down to the lower chambers. It is the only known direct muscular connection between the upper and lower heart chambers, and serves to conduct impulses for the rhythmic heart beat from the atrio-ventricular node to the heart muscle. Named after Wilhelm His, German anatomist.

buttock—(but'ek) prominence over the gluteal muscles.

calculus—(kal'kyoo-les) stone; formed in various parts of the body; may consist of different substances.

calorie—(kal'o-re) sometimes called large or kilo-calories. Unit used to express food energy. The amount of heat required to raise the temperature of 1 kilogram of water 1 degree Centigrade. A high calorie diet has a prescribed calorie value above the total daily energy requirement. A low calorie diet has a prescribed calorie value below the total energy requirement.

calyx—(ka'liks) cup-shaped division of the renal pelvis.

capacity—(ka-pas'i-tē) the power of containing a certain quantity exactly.

capillaries—(kap'i-lar-ez) extremely narrow tubes forming a network between the arterioles and the veins. The walls are composed of a single layer of cells through which oxygen and nutritive materials pass out of the tissues, and carbon dioxide and waste products are admitted from the tissues into the bloodstream.

carbohydrate—(kar'be-hi'drat) organic compounds containing carbon, hydrogen, and oxygen in specific proportions; for example, sugars, starches, and cellulose.

carcinoma—(kar'se-no'ma) cancer, a malignant tumor.

cardiac—(kar'de-ak) pertaining to the heart. Sometimes refers to a person who has heart disease.

cardiac cycle—(kar'de-ak) one total heart beat, i.e., one complete contraction and relaxation of the heart. In humans this normally occupies about 0.85 second.

cardiac output—(kar'de-ak) the amount of blood pumped by the heart per minute.

cardiac tamponade—(kar'de-ak tam-pon-ȧd') Acute compression of the heart due to the enffusion of fluid or blood into the peridarium sac.

cardiovascular—(kar'de-o-vas'ku-lar) pertaining to the heart and blood vessels.

cardiovascular-renal disease—(kar'de-o-vas'ku-lar re'nal) disease involving the heart, blood vessels, and kidneys.

carditis—(kar-di'tis) inflammation of the heart.

caries—(kar'ez) decay of teeth or of bone.

carotid—(kah-rot'id) from Greek word meaning to plunge into deep sleep; carotid arteries of the neck so called because pressure on them may produce unconsciousness.

carotid arteries—(kah-rot'id) the left and right common carotid arteries are the principal arteries supplying the head and neck. Each has two main branches, external carotid artery and internal carotid artery.

carpal—(kar'p'l) pertaining to the wrist.

cartilage—(kar'ti-lij) an elastic tissue composing most of the skeleton in young vertebrates and converting, for the most part, into bone in mature vertebrates.

catabolism—(ka-tab'e-liz'm) breakdown of food compounds or of protoplasm into simpler compounds; opposite of anabolism, the other phase of metabolism.

catalyst—(kat'l-ist) substance which accelerates the rate of a chemical reaction.

cataract—(kat'a-rakt') opacity of the lens of the eye.

categorization (emergency service)—a system used to identify the readiness and capabilities of the hospital and its entire staff to receive and treat, adequately and expeditiously, emergency patients. The four basic American Medical Association categories are: I—Comprehensive, II—Major, III—General, IV—Basic. Many states have developed their own categorization schemes which identify levels of urgent and critical care capability.

catheterization—(kath'e-ter-i-za'shun) in cardiology, the process of examining the heart by means of introducing a thin tube (catheter) into a vein or artery and passing it into the heart.

caudal—(kaw'dal) the opposite end of the head—same as inferior, in human anatomy.

cecum—(se'kum) blind pouch; the pouch at the proximal end of the large intestine.

celiac—(se'le-ak) pertaining to the abdomen.

cellulose—(sel'u-los) polysaccharide, the main plant carbohydrate.

centimeter—(sen'ti-me'ter) 1/100 of a meter, about 2/5 of an inch.

Central Communications Operations—a system command and control center which is responsible for establishing communication channels and identifying the necessary equipment and facilities to permit immediate management and control of an EMS patient. A center may be located at a fire or police department, and emergency center (EOC), or a hospital.

cerebral vascular accident—(ser'e-bral vas'ku-lar) sometimes called cerebrovascular accident, apoplectic stroke, or simply stroke. An impeded blood supply to some part of the brain, generally caused by one of the following four conditions:

1. a blood clot forming in the vessel (cerebral thrombosis).
2. a rupture of the blood vessel wall (cerebral hemorrhage).
3. a piece of clot or other material from another part of the vascular system which flows to the brain and obstructs a cerebral vessel (cerebral embolism).
4. pressure on a blood vessel as by a tumor.

cerebrospinal—(cer'e-bro-spin-al) of or pertaining to the spinal cord, or to those coupled with the spinal and cranial nerves.

cerebrovascular—(ser'e-bro-vas'ku-lar) pertaining to the blood vessels in the brain.

cervix—(ser'viks) neck; any neckline structure.

chemotherapy—(ke-mo-ther'ah-pe) the treatment of disease by administering chemicals. Frequently used in the phrase "chemotherapy of hypertension," i.e., the treatment of high blood pressure by the use of drugs.

Cheyne-Stokes respiration—(chan'stoks') a form of breathing marked by a gradual increase in the speed of the respirations followed by a gradual decrease and total cessation for from five to fifty seconds.

chloral hydrate—(klo'ral hi'drat) a drug, which has a calming action, used to induce sleep. A sedative.

cholecystectomy—(ko-le-sis-tek'to-me) removal of the gallbladder.

cholesterol—(ko-les'ter-ol) a fat-like substance found in animal tissue. In blood tests the normal level for Americans is assumed to be between 180 and 230 milligrams per 100 cc. A higher level is often associated with high risk or coronary atherosclerosis.

chordae tendinae—(kor'di ten-din'e-i) fibrous chords which serve as guy ropes to hold the valves between the upper and lower chambers of the heart secure when forced closed by pressure of blood in the lower chambers. They stretch from the cusps of the valves to muscles called papillary muscles in the walls of the lower heart chambers.

chorea—(ko-re'ah) involuntary, irregular twitching of the muscles sometimes associated with rheumatic fever. Also called St. Vitus Dance, or Sydenham's Chorea.

chronic—(kron'ik) long lasting or recurring frequently over a long period of time.

cilia—(sil'e-ah) hairlike projections of protoplasm.

circulatory—(ser'ku-lah-to-re) pertaining to the heart, blood vessels, and the circulation of the blood.

claudication—(klaw-de-ka'shun) pain and lameness or limping caused by defective circulation of the blood in the vessels of the limbs.

clubbed fingers—(klubd) fingers with a short broad tip and overhanging nail, somewhat resembling a drumstick. This condition is sometimes seen in children born with certain kinds of heart defects.

coagulation—(ko-ag-u-la'shun) process of changing from a liquid to a thickened or solid state. The formation of a clot.

collateral circulation—(ko-lat'er-al ser-ku-la'shun) circulation of the blood through nearby smaller vessels when a main vessel has been blocked up.

compensation—(kom-pen-sa'shun) a change in the circulatory system made to compensate for some abnormality. An adjustment of size of heart or rate of heart beat made to counterbalance a defect in structure of function. Often used specifically to describe the maintenance of adequate circulation in spite of the presence of heart disease.

complication—(kom'pli-ka'shan) a problem; entanglement; difficulty.

comprehensive—(kom'pre-hen-siv) embracing a great number of a wide extent; wide in scope.

concha—(king'kah) shell-shaped structure; for example, bony projections into the nasal cavity.

congenital—(kon-jen'i-tal) present at birth.

congenital anomaly—(kon-jen'it-al ah-nom'ah-le) an abnormality present at birth.

congestive heart failure—(kon-jes'tiv) when the heart is unable to adequately pump out all the blood that returns to it, there is backing up of blood in the veins leading to the heart. A congestion or accumulation of fluid in various parts of the body (lungs, legs, abdomen, etc) may result from the heart's failure to maintain a satisfactory circulation.

constriction—(kon-strik'shun) narrowing, as in the phrase "vaso-constriction," which is a narrowing of the internal diameter of the blood vessels, caused by a contraction of the muscular coat of the vessels.

constrictive pericarditis—(kon-strik'tiv per'e-kar-di'tis) a shrinking and thickening of the outer sac of the heart which prevents the heart muscle from expanding and contracting normally.

contralateral—(kon'tra-lat'-er-el) on the opposite side.

convulsion—(kon-vul'shan) a violent and involuntary spasmodic contraction of the muscles.

coordination—(ko-or'di-na'shun) the harmonious functioning of interrelated organs and parts.

cornea—(kor'ne-ah) the transparent anterior part of the external coat of the eye, covering the iris and the pupil.

coronary—(kor'o-ner-i) encircling; in the form of a crown.

coronary arteries—(kor'o-ner-i) two arteries, arising from the aorta, arching down over the top of the heart, and conducting blood to the heart muscle.

coronary atherosclerosis—(kor'o-ner-i ath'er-o-skle-ro'sis) commonly called coronary heart disease. An irregular thickening of the inner layer of the walls of the arteries which conduct blood to the heart muscle. The internal channel of these arteries (the coronaries) becomes narrowed and the blood supply to the heart muscle is reduced.

coronary occlusion—(kor'o-ner-i ok-klu'zhun) an obstruction (generally a blood clot) in a branch of one of the coronary arteries which hinders the flow of blood to some part of the heart muscle. This part of the heart muscle then dies because of lack of blood supply. Sometimes called a coronary heart attack, or simply a heart attack.

corpulmonale—(kor'pul-mo-nal'e) heart disease resulting from disease of the lungs or the blood vessels in the lungs. This is due to resistance to the passage of blood through the lungs.

corpus—(kor'pes) body.

corpuscle—(kor'pus'l) very small body or particle.

cortex—(kor'teks) outer part of an internal organ; for example, of the cerebrum and of the kidneys.

costal—(kos'tal) pertaining to the ribs.

coumarin—(koo'mah-rin) a class of chemical substances which delay clotting of the blood. An anti-coagulant.

cricoid—(kri'koid) ring-shaped; a cartilage of this shape in the larynx.

cutaneous—(ku-ta'ne-us) pertaining to the skin.

cyanosis—(si-ah-no'sis) blueness of skin caused by insufficient oxygen in the blood. Oxygen is carried by hemoglobin, which is bright red when saturated with oxygen. When hemoglobin is not carrying oxygen, it is purple and is called reduced hemoglobin. The blueness of the skin occurs when the amount of reduced hemoglobin exceeds 5 grams per 100 cc. of blood.

cytology—(si-tol'o-ji) study of cells.

decompensation—(de-kom-pen-sa'shun) inability of the heart to maintain adequate circulation, usually resulting in a waterlogging of tissues. A person whose heart is failing to maintain normal circulation is said to be "decompensated."

decontaminate—(de-kon-tam'i-nat) to purify; to free from harmful substances.

defecation—(def-ek-a'shun) elimination of waste matter from the intestines.

defibrillator—(defi'bre-la-tor) any agent of measure, such as an electric shock, which stops

an incoordinate contraction of the heart muscle and restores a normal heart beat.

deformity—(di-far'mi-tē) irregularity of shape or features.

deglutition—(deg-lu-tish'un) swallowing.

dehydrate—(de-hi'drat) to remove water from.

deliberate—(di-lib'er-it) carefully weighed or considered; slow, unhurried action.

depressant—(de-pres'ant) any drug which decreases functional activity.

derivative—(di-riv'a-tiv) drawn from a source or from something else.

dermis, corium—(der'mis, kor'e-um) true skin.

deteriorate—(di-ter'e-o-rāt to grow worse or to be impaired in quality.

dextrose—(deks'tros) glucose, a monosaccharide, the principal blood sugar.

diaphragm—(di'a-fram) membrane or partition that separates one thing from another; the muscular partition between the thorax and abdomen; the midriff.

diaphysis—(di-af'i-sis) shaft of a long bone.

diathrosis—(di'ar-thro'sis) freely movable joint.

diastole—(di-as'to-le) in each heart beat, the period of the relaxation of the heart. Auricular diastole is the period of relaxation of the atria, or upper heart chambers. Ventricular diastole is the period of relaxation of the ventricles, or lower heart chambers.

diet—(di-et) daily allowance or intake of food and drink.

digestion—(di-jes'chun) conversion of food into assimilable compounds.

digitalis—(dig-e-tal'is) a drug prepared from leaves of foxglove plant which strengthens the contraction of the heart muscle, slows the rate of contraction of the heart, and by improving the efficiency of the heart, may promote the elimination of fluid from body tissues.

dilation—(di-la'shun) a stretching or enlargement of the heart or blood vessels beyond the norm.

diplopia—(dip-lo'pe-ah) double vision seeing one object as two.

distal—(dis'tal) toward the end of a structure; opposite of proximal.

distention—(dis-ten'shun) the state of being enlarged.

diuretic—(di-u-ret'ik) a medicine which promotes the excretion of urine. Several types of drugs may be used, such as mercurials, chlorothiazide, xanthine, and benzothiadiazine derivatives.

dorsal, posterior—(dor'sal, pos-te're-or) pertaining to the back, opposite of ventral.

dropsy—(drop'si) accumulation of serous fluid in a body cavity or in tissues; edema.

ductus arteriosus—(duk'tus ar-te're-o'sis) a small duct in the heart of the fetus between the artery leaving the left side of the heart (aorta) and the artery leaving the right side of the heart (pulmonary artery). Normally this duct closes soon after birth. If it does not close, the condition is known as patent or open ductus arteriosus.

dura mater—(dyoor'a ma'ter) literally strong or hard mother; outermost layer of the meninges.

dyspnea—(disp-ne'ah) difficult or labored breathing.

dystrophy—(dis-tro'fi) faulty nutrition.

ectopic—(ek-top'ik) displaced; not in the normal place; for example, extrauterine pregnancy.

edema—(e-de'mah) swelling due to abnormally large amounts of fluid in the tissues of the body.

effector—(e-fek'ter) responding organ; for example, voluntary and involuntary muscle, the heart, and glands.

ejaculation—(e-jak-u-la'shun) a sudden act of expulsion, as of the semen.

electric cardiac pacemaker—(kar'de-ak pas'mak-er) an electric device that can control the beating of the heart by a rhythmic discharge of electrical impulses.

electrocardiogram—(e-lek'tro-kar'de-o-gram) often referred to as EKG or ECG. A graphic record of the electric currents produced by the heart.

electrocardiograph—(e-lek'tro-kar'de-o-graf) an instrument which records electric currents produced by the heart.

electroencephalogram — (e-lek'tro-en-cef'a-lo-gram) graphic record of brain's action potentials.

elimination—(e-lim'a-na'shen) expulsion of wastes from the body.

embolism—(em'bo-lizm) the blocking of a blood vessel by a clot or other substance carried in the bloodstream.

embolus—(em'bo-lus) a blood clot (or other substance such as air, fat, tumor) inside a blood vessel which is carried in the bloodstream to a smaller vessel where it becomes an obstruction to circulation.

embryo—(em'bre-o) animal in early stages of intrauterine development; the human fetus the first three months after conception.

emergency ambulance (air)—fixed-wing or helicopter-type aircraft which provide covered and accessible emergency medical transport capabilities.

Emergency Medical Services (EMS)—the services utilized in responding to the perceived individual need for immediate medical care in order to prevent loss of life or aggravation of physiological or psychological illness or injury.

Emergency Medical Technician-Ambulance (EMT-A)—person trained in emergency medical care in accordance with standards prescribed by the Department of Transportation (i.e., basic 81-hour course), or an equivalent training program. This allied health person provides emergency medical services according to level of training and experience. (also EMT-1, EMT-A, or Basic EMT)

Emergency Medical Technician-Paramedic—person trained for advanced life support services to include sophisticated trauma, cardiac care, and other critical care elements for interventive treatment, shock therapy, drug administration, and cardiac rhythm detection control. A National Standard is presently being developed for this new category. (also Advanced EMT or EMT-2)

emergency rescue vehicle—a vehicle not designed for patient transport which contains advanced life support equipment and personnel capable of providing extrication and emergency care at the scene or in conjunction with transport.

emesis—(em'e-sis) vomiting.

emphysema—(em'fi-se'ma) dilation of pulmonary alveoli.

empyema—(em-pi-e'mah) pus in a cavity; for example, the chest cavity.

EMS Council—a formally established and responsible entity representing diverse groups of both providers and consumers of emergency medical services assembled for the purpose of reviewing and evaluating the provision of such services in a defined system's geographical area. Public input into "EMS Policy" may be achieved through this body.

EMS personnel—those key individual providers in the EMS system to include: physicians, emergency and critical care nurses, EMT-Ambulance and EMT-Paramedic, Central Dispatchers and Telephonic Screeners, First Aid Responders, Project Directors, and System EMS Coordinators.

encephalitis—(en-sef-a-li'tis) inflammation of the brain.

encephalon—(en-sef'a-lon) brain.

endocarditis—(en'do-kar-di'tis) inflammation of the inner layer of the heart (endocardium) usually associated with acute rheumatic fever or some infectious agents.

endocardium—(en-do-kar'de-um) a thin, smooth membrane forming the inner surface of the heart.

endocrine—(en'do-krin') secreting into the blood or tissue fluid rather than into a duct; opposite of exocrine.

endothelium—(en-do-the'le-um) the thin lining of the blood vessels.

energy—(en'er-ji) capacity for doing work.

enteron—(en'te-ron) intestine.

environment—(in'vi-ren-ment) the circumstances, objects, or conditions by which one is surrounded. (Temperature, climate, humidity).

enzyme—(en'zim) catalytic agent formed in living cells.

epicardium—(ep-e-kar'de-um) the outer layer of the heart wall. Also called the visceral pericardium.

epidermis—(ep'e-dur'mis) "false" skin; outermost layer of skin.

epinephrine—(ep-e-nef'rin) one of the secretions of two small glands, called adrenal glands, located just above the kidneys. This secretion, also called adrenalin, and sometimes prepared synthetically, constricts the small blood vessels (arterioles), increases the rate of heart beat, and raises blood pressure. It is called a vasoconstrictor or vasopressor substance.

equivalent—(i-kwiv'a-lent) equal in value, measure, force, effect or significance.

essential hypertension—(hi-per-ten'shun) sometimes called primary hypertension, and commonly known as high blood pressure. An elevated blood pressure not caused by kidney or other evident disease.

eupnea—(up-ne'ah) normal respiration.

evaluation—(i-val'ū-ā-shun) an appraisal of something.

exocrine—(eks-o'krin) secreting into a duct; opposite of endocrine.

expiration—(ek-spi-ra-shun) the act of breathing out; emission of breath.

expulsion—(ik-spul'shan) the act of driving out or expelling.

extracorporeal circulation—(eks'trah-kor-po're-al) the circulation of the blood outside the body as by a mechanical pump-oxygenator. This is often done while surgery is being performed inside the heart.

extrasystole—(eks-trah-sis'to-le) a contraction of the heart which occurs prematurely and interrupts the normal rhythm.

extremity—ik-strem'i-tē) the end part of a limb or the limb itself, such as the human hand or foot.

extricate—(ek'stri-kāt) to free or remove from a difficulty.

eyeground—(i'ground) the inside of the back part of the eye seen by looking through the pupil. Examining the eyeground is one means of assessing changes in the blood vessels. Also called the fundus of the eye.

facilitate—(fa-sil'i-tāt) to make easy or less difficult.

femoral artery—(fem'or-al ar'ter-e) main blood vessel supplying blood to the leg.

fetus—(fe'tes) unborn young, especially in the later stages; in human beings, from third month of intrauterine period until birth.

fiber—(fi'ber) threadlike structure.

fibrillation—(fi'bre-la'shun) uncoordinated contractions of the heart muscle occurring when the individual muscle fibers take up independent irregular contractions.

fibrin—(fi'brin) an elastic protein which forms the essential portion of a blood clot.

fibrinogen—(fi-brin'o-jen) a soluble protein in the blood which, by the action of certain enzymes, is converted into the insoluble protein of a blood clot.

fibrinolysin—(fi-bre-nol'is-in) an enzyme which can cause coagulated blood to return to a liquid state.

fibrinolytic—(fi'brin-o-lit'ik) having the ability to dissolve a blood clot.

flaccid—(flak'sid) soft, limp.

flail chest—(flāl chest) exhibiting abnormal or paradoxical mobility of the chest wall.

fluoroscope—(floo-o'ro-skop) an instrument for observing structures deep inside the body. X-rays are passed through the body onto a fluorescent screen where the shadow of deep lying organs can be seen.

follicle—(fol'i-k'l) small sac or gland.

fontanelle—(fon'te-nel') "soft spots" of the infant's head; unossified areas in the infant skull.

foramen ovale—(fo-ra'men o-va'le) an oval hole between the left and right upper chambers of the heart which normally closes shortly after birth. Its failure to close is one of the congenital defects of the heart, called a patent foramen ovale.

fundus—(fun'des) base of a hollow organ; for example, the part farthest from its outlet.

fundus of the eye—(fun'des) the inside of the back part of the eye seen by looking through the pupil. Examining the fundus of the eye is used as a means of assessing changes in the blood vessels. Also called the eyeground.

gallop rhythm—an extra, clearly heard heart sound which, when the heart rate is fast, resembles a horse's gallop. It may or may not be significant.

ganglion—(gang'gle-on) a mass of nerve cells, which serves as a center of nervous influence.

ganglionic blocking agents—(gang-gle-on'ik) a drug that blocks the transmission of a nerve impulse at the nerve centers (ganglia). Some of these drugs, such as hexamethonium and mecamylamine hydrochloride, may be used in the treatment of high blood pressure.

gastric—(gas'trik) pertaining to the stomach.

genetics—(je-net'iks) the study of heredity.

genitals—jen'a-t'ls) reproductive organs, genitalia.

gestation—(jes-ta'shen) pregnancy.

gland—(gland) secreting structure.

glaucoma—(gla-kō'ma) a disease of the eye characterized by increased intraocular pressure and progressive loss of vision.

glucose—(gloo'kos) monosaccharide or simple sugar; the principal blood sugar.

gluteal—(gloo-te'el) of or near the buttocks.

gonad—(gon'ad) sex gland in which reproductive cells are formed.

heart block—interference with the conduction of the electrical impulses of the heart which can be either partial or complete. This can result in dissociation of the rhythms of the upper and lower heart chambers.

heart-lung machine—a machine through which the bloodstream is diverted for pumping and oxygenation while the heart is opened for surgery.

hemiplegia—(hem-e-ple'je-ah) paralysis of one side of the body caused by damage to the opposite side of the brain. The paralyzed arm and leg are opposite to the side of the brain damage because the nerves cross in the brain, and one side of the brain controls the opposite side of the body. Such paralysis is sometimes caused by a blood clot or hemorrhage in a blood vessel in the brain.

hemoglobin—(he-mo-glo'bin) the oxygen-carrying red pigment of the red blood corpuscles. When it has absorbed oxygen in the lungs, it is bright red and called oxyhemoglobin. After it has given up its oxygen load in the tissues, it is purple in color, and is called reduced hemoglobin.

hemolysis—(he-mol'i-sis) destruction of red blood cells with escape of hemoglobin from them into surrounding medium.

hemorrhage—(hem'or-ij) loss of blood from a blood vessel. In external hemorrhage blood escapes from the body. In internal hemorrhage blood passes into tissues surrounding the ruptured blood vessel.

hepar—(he'par) liver.

heparin—(hep'ah-rin) a chemical substance which tends to prevent blood from clotting. Sometimes used in cases of an existing clot in an artery or vein to prevent enlargement of the clot or the formation of new clots. An anticoagulant.

heredity—(he-red'a-ti) transmission of characteristics from a parent to a child.

hernia, "rupture"—(hur'ni-a, "rup'cher") protrusion of a loop of an organ through an abnormal opening.

hexamethonium chloride—(hek-sah-meth-own'e-um klo'ride) a drug which lowers blood pressure and increases blood flow by interfering with the transmission of nerve impulses which constrict the blood vessels. One of the ganglionic blocking agents, it is one of the drugs used in the treatment of high blood pressure.

hormone—(hor'mon) substance secreted by an endocrine gland.

hydralazine hydrochloride—(hi-drahl'a-zin hi-dro-klor' ride) a drug which lowers blood pressure. One of the anti-hypertensive agents.

hymen—(hi'men) Greek for skin; mucous membrane that may partially or entirely occlude the vaginal outlet.

hyoid—(hi'oid) U-shaped; bone of this shape at the base of the tongue.

hyperemia—(hi'per-e'mi-a) increased blood in a part.

hyperopia—(hi-per-o'pe-a) farsightedness.

hyperpnea—(hi'perp-ne'a) abnormally rapid breathing; panting.

hypertension—(hi-per-ten'shun) commonly called high blood pressure. An unstable or persistent elevation of blood pressure above the normal range, which may eventually lead to increased heart size and kidney damage.

hyperthermia—(hi'per-ther'mi-a) fever; body temperature above 37°C.

hyperthyroidism—(hi-per-thi'roid-izm) a condition in which the thyroid gland is overly active. This may eventually result in a speeded up rate of heart beat.

hypotension—(hi-po-ten'shun) commonly called low blood pressure. Blood pressure below the normal range. Most commonly used to describe an acute fall in blood pressure, as occurs in shock

hypothalamus—(hi-po-thal'ah-mus) a part of the brain which exerts control over activity of the abdominal organs, water balance, temperature, etc. Damage to the hypothalamus may cause abnormal gain in weight, among other things.

hypothermia—(hi-po-ther'me-ah) also called hypothermy. The lowering of the body temperature (usually to 86°-88°F.) in order to slow the metabolic processes during heart surgery. In this cooled state, body tissues require less oxygen.

hypothyroidism—(hy-po-thi'roid-izm) a condition in which the thyroid gland is underactive, resulting in the slowing down of many of the body processes including the heart rate.

hypoxia—(hi-pok'se-ah) less than normal content of oxygen in the organs and tissues of the body. At very high altitudes a healthy person suffers from hypoxia because of insufficient oxygen in the air that is breathed.

iliac artery—(il'e-ak ar'ter-e) a large artery which conducts blood to the pelvis and the legs.

immobilize—(i-mō'bi-līz) to restrain movement of, as the body or bodily parts.

improvise—(im'pro-vīz) to compose, perform or provide anything on the spur of the moment.

incontinent—(in-kon'ti-nent) unable to restrain natural bodily discharges.

infarct—(in'farkt) an area of a tissue which is damaged or dies as a result of not receiving a sufficient blood supply. Frequently used in the phrase "myocardial infarct" referring to an area of the heart muscle damaged or killed by an insufficient flow of blood through the coronary arteries which normally supply it.

inferior—(in-fer'i-er) lower; opposite of superior.

ingest—(in-jest') to put or take something into the body.

inhalation—(in'ha-la'shen) inspiration or breathing in; opposite of exhalation or expiration.

inhibition—(in'hi-bish'en) checking or restraining of action.

inspiration—(in-spi-rā-shun) inhaling air, as in breathing.

insufficiency—(in-suh-fish'en-se) incompetency. In the term "valvular insufficiency" an improper closing of the valves which admits a back flow of blood in the wrong direction. In the term "myocardial insufficiency," inability of the heart muscle to do a normal pumping job.

insulin—(in'sa-lin) hormone secreted by islands of Langerhans in the pancreas.

integumentary—(in-teg-u-men'tar-e) 1. Pertaining to or composed of skin. 2. Serving as a covering, like the skin.

intermit—(in-ter-mit) to cause to cease for a time.

intima—(in'te-mah) the innermost layer of a blood vessel.

intravascular—(in'trah-vas'ku-lar) within a vessel or vessels.

intravenous—(in'trah-ve'nus) within a vein or veins.

intubate—(in'tu-bāt) to insert a tube into a hollow organ, as into the larynx to aid breathing.

involuntary—(in-vol'en-ter'i) not willed; opposite of voluntary.

ischemia—(is-ke'me-ah) a local, usually temporary, deficiency of blood in some part of the body, often caused by a constriction or an obstruction in the blood vessel supplying that part.

jugular veins—(jug'u-lar) veins which return blood from the head and neck to the heart.

kilogram—(kil'a-gram) 1,000 grams; approximately 2.2 pounds.

labia—(la'bi-a) lips.

lateral—(lat'er-el) of or toward the side; opposite of medial.

lethargic—(le-thar'jik) inclined to sleep; dull; sluggish.

leukocyte—(loo'ke-sit') white blood cell.

ligament—(lig'a-ment) bond or band connecting two objects; in anatomy a band of white fibrous tissue connecting bones.

linoleic acid—(lin-o-lay'ik) an important component of many of the unsaturated fats. It is found widely in oils from plants. A diet with a high linoleic acid content tends to lower the amount of cholesterol in the blood.

lipid—(li'pid) fat.

litter—(lit'er) a stretcher for transporting the sick or wounded.

livid—(liv'id) discolored, as from the effects of contusion or congestion; black and blue.

loin—loin part of the back between the ribs and hip bones.

lumbar—(lum'ber) of or near the loins.

lumen—(lu'men) the passageway inside a tubular organ. Vascular lumen is the passageway inside a blood vessel.

lymph—(limf) watery fluid in the lymphatic vessels.

lymphocyte—(lim'fe-sit') one type of white blood cell.

major—(mā'jer) greater, as in size, amount, extent, importance or rank.

malignant hypertension—(mah-lig'nant hi-per-ten' shun) severe high blood pressure that runs a rapid course and causes damage to the blood vessel walls in the kidney, eye, etc.

mandatory—(man'da-tor-ē) obligatory by reason of a command.

medial—(me'di-el) of or toward the middle; opposite of lateral.

mediastinum—(me'di-as-ti'nem) middle section of the thorax; this is, between the two lungs.

membrane—(mem-bran) thin layer or sheet.

meningeal—(me-nin'je-al) of or pertaining to the meninges.

meningitis—(men-in-ji-tis) inflammation of the membranes of the brain or spinal cord.

menstruation—(men'stroo-a'shen) monthly discharge of blood from the uterus.

mesentery—(mes'n-ter'i) fold of peritoneum that attaches the intestine to the posterior abdominal wall.

metabolism—(me-tab'o-lizm) complex process by which food is utilized by a living organism.

metacarpus—(met'e-kar'pes) "after" the wrist; hence, the part of the hand between the wrist and fingers.

metatarsus—(met'e-tar'ses) "after" the instep; hence, the part of the foot between the tarsal bones and the toes.

meter—(me'ter) about 39.5 inches.

millimeter—(mil'li-me-ter) 1/1,000 meter; about 1/25 inch.

minor—(mi'ner) lesser, as in size, amount, extent, importance or rank.

mitral—(mi'tral) shaped like a miter.

mitral insufficiency—(mi'tral) an improper closing of the mitral valve between the upper and lower chamber in the left side of the heart which admits a back flow of blood in the wrong direction. Sometimes the result of scar tissue forming after a rheumatic fever infection.

mitral valve—(mi'tral) sometimes called bicuspid valve. A valve of two cusps or triangular segments, located between the upper and lower chamber in the left side of the heart.

Mobile Intensive Care Unit Nurse—nurse specializing in the management of medical and surgical emergencies who practices either in a mobile emergency unit or directs the patient care of a paramedic via hospital-vehicle telemetry communication. The MICU nurse also participates in the paramedic training program, assists in certifying paramedical personnel, and participates in overall program evaluation.

Mobile Intensive Care Vehicle—a vehicle designed to include the space, equipment, supplies, communications, and biomedical capabilities necessary for the provision of supportive, definitive, and therapeutic emergency medical care for the ill or injured both on site and during transport, by specially qualified personnel. Such vehicles are to be affiliated with a designated base station hospital.

monometer—(ma-nom'e-ter) instrument used for measuring the pressure of the fluids.

mottling—(mot'ling) a condition of spotting with patches of color.

mucous membranes—(mu'kus mem'bran) pertaining to or resembling mucus. Thin layer or sheet.

murmur—(mur'mur) an abnormal heart sound, sounding like fluid passing an obstruction, heard between the normal lub-dub heart sounds.

myocardial infarction—(mi-o-kar'de-al in-[illegible]rk'shun) the damaging or death of an area of [illegible] heart muscle (myocardium) resulting from [illegible] reduction in the blood supply reaching that area.

myocardial insufficiency—(mi-o-kar'de-al) an inability of the heart muscle (myocardium) to maintain normal circulation.

myocarditis—(my'o-kar-di'tis) inflammation of the heart muscle (myocardium).

myocardium—(mi-o-kar'de-um) the muscular

wall of the heart. The thickest of the three layers of the heart wall, it lies between the inner layer (endocardium) and the outer layer (epicardium).

myopia—(mi-o'pi-a) nearsightedness.

nares—(nar'ez) nostrils.

neurogenic—(nu-ro-jen'ik) originating in the nervous system.

neurosis—(nu-ro'sis) a functional nervous disease in which the personality remains more or less intact.

911—a three digit emergency telephone number accepted and promulgated by the telephone industry as the nationwide emergency number.

nitrites—(ni'trits) a group of chemical compounds, many of which cause dilation of the small blood vessels, and thus lower blood pressure. They are vasodilators. Examples are amyl nitrite, sodium nitrite, etc.

nitroglycerin—(ni-tro-glis'er-in) a drug (one of the nitrates) which relaxes the muscles in the blood vessels. Often used to relieve attacks of angina pectoris and spasm of coronary arteries. It is one of the vasodilators.

nitro-stat—(ni-tro-stat) a small, white pill used to control and treat angina pectoris.

noradrenalin—(nor-ad-ren'ah-lin) an organic compound which produces a rise in blood pressure by constricting the small blood vessels. Sometimes used in the treatment of shock. Also called norepinephrine and levarterenol.

norepinephrine—(nor'ep-e-nef'rin) an organic compound which produces a rise in blood pressure by constricting the small blood vessels. Sometimes used in the treatment of shock. Also called noradrenalin and levarterenol.

nutrition—(nu-trish'un) the combination of processes by which a living organism receives and utilizes the materials necessary for the maintenance of its functions and for the growth and renewal of its components.

occipital(oc-sip'i-tal) pertaining to the back part of the head.

open heart surgery—surgery performed on the opened heart while the blood stream is diverted through a heart-lung machine. This machine pumps and oxygenates the blood in lieu of the action of the heart and lungs during the operation.

ophthalmologist—(op-thal-mol'o-jist) a medical doctor who deals with the anatomy, functions and diseases of the eye.

optometrist—(op-tom'i-trist) one who is skilled in examining and testing the eyes.

organic heart disease—heart disease by some structural abnormality in the heart or circulatory system.

os—(os) Latin for mouth and for bone.

otitis media—(o-ti'tis me'de-ah) an infection of the middle ear, frequently caused by a spreading of a bacterial infection of the throat.

pacemaker—(pas'mak-er) a small mass of specialized cells in the right upper chamber of the heart which give rise to the electrical impulses that initiate contractions of the heart. Also called sino-atrinal node or S-A node of Keith-Flack. The term "pacemaker," or more exactly, "electric cardiac pacemaker," or "electric pacemaker" is applied to an electrical device which can substitute for a defective natural pacemaker and control the beating of the heart by a series of rhythmic electrical discharges. If the electrodes which deliver the discharges to the heart are placed on the outside of the chest, it is called an "external pacemaker." If the electrodes are paced within the chest wall, it is called an "internal pacemaker."

palate—(pal'it) roof of the mouth.

palpitation—(pal-pi-ta'shun) a fluttering of the heart or abnormal rate of rhythm of the heart experienced by the person.

paralysis—(pe-ral'e-sis) loss of the power of motion of sensation, especially loss of voluntary motion.

paraplegia—(par-ah-ple'je-ah) loss of both motion and sensation in the legs and lower part of the body. This most commonly is due to damage to the spinal cord, but sometimes results from a blood clot or hemorrhage in an artery conducting blood to the spinal cord.

parasympathetic nervous system—(par'ah-sim-pah-thet'ik) a part of the autonomic or involuntary nervous system. Stimulation of various parasympathetic nerves causes the pupils of the eyes to contract; the heart to beat more slowly, and produces other non-voluntary reactions.

patella—(pa-tel'a) small, shallow pan; the kneecap.

pathology—(pah-thol'o-je) the study of the essential nature of disease and structural and functional changes it causes.

pelvis—(pel'vis) basin or funnel-shaped structure.

perception—(per-sep-shan) understanding or recognition of something.

percussion—(per-kush'un) tapping the body as an aid in diagnosing the condition of parts beneath by the sound obtained, much as one taps on a barrel to detect its fullness.

pericarditis—(per'e-kar-di'tis) inflammation of the thin membrane sac (pericardium) which surrounds the heart.

pericardium—(per-e-kar'de-um) a thin membrane sac which surrounds the heart and roots of the great vessels.

peripheral—(pə-rif'er-el) pertaining to an outside surface.

phalanges—(fe-lan'jez) finger or toe bones.

pharmacology—(fahr-mah-kol'o-je) the science which deals with the study of drugs in all its aspects.

pharynx—(far'ingks) the muscular tube which connects the cavity of the mouth and the esophagus.

phenomenon—(fe-nom'e-non) any sign or objective symptom.

phlebitis—(fle-bit'tis) inflammation of a vein, often in the leg. Sometimes a blood clot is formed in the inflamed vein.

phrenic—(fren'ik) pertaining to the diaphragm.

physical therapy—(ther'ah-pe) the treatment of disease by physical means. Includes the use of heat, cold, water, light, electricity, manipulation, massage, exercise, and mechanical devices. Also called physiotherapy.

pia mater—(pi'a ma'ter) gentle mother; the vascular innermost covering (meninges) of the brain and cord.

plasma—(plaz'mah) the cell-free liquid portion of uncoagulated blood. It is different from serum which is the fluid portion of the blood obtained after coagulation.

platelet—(plāt'lit) a disk-shaped structure found in the blood and known for its role in blood coagulation.

polygraph—(pol'e-graf) an instrument for taking synchronous records of several different pulsations.

pons—(ponz) bridge.

popliteal—(pop-lit'i-el) behind the knee.

porous—(pōr'us) having many pores; permeable by liquids, light or air.

posterior—(pos-ter'i-er) following after; hence, located behind; opposite of anterior.

potential—(po-ten'shal) anything that may be possible.

pressor—(pres'or) a substance which raises the blood pressure and accelerates the heart beat. Also denotes certain nerve fibers which produce a rise in blood pressure when stimulated.

primary hypertension—(hi-per-ten'shun) sometimes called essential hypertension, and commonly known as high blood pressure. An

elevated blood pressure not caused by kidney or other evident disease.

procaine amide—(pro'kan ami'id) a drug sometimes used to treat abnormal rhythms of the heart beat.

proficient—(pro-fish'ent) skilled or competent in any branch of learning.

prone—(pron) lying with the face downward.

prophylaxis—(pro'fi-lak'sis) preventive treatment.

prothrombin—(prō-throm'bin) a proenzyme in the blood which, when activated, becomes thrombin.

proximal—(prok'sa-m'l) next or nearest; located nearest the center of the body of the point of attachment of a structure.

psychosis—(si-ko'sis) a severe, specific mental disorder that has a characteristic origin, course, and symptoms.

psychosomatic—(si'ko-sl-mat'ik) pertaining to the influence of the mind, emotions, fears, etc., upon the functions of the body, especially in relation to disease.

psychotherapy—(si-ko-ther'ah-pe) the treatment of disorders by the use of such means as persuasion, suggestion, educational techniques, lay or religious counseling, or psychoanalysis.

puberty—(pu'ber-ti) age at which the reproduction organs become functional.

pulmonary artery—(pul'mo-na-re) the large artery which conveys unoxygenated (venour) blood from the lower right chamber of the heart to the lungs. This is the only artery in the body which carries unoxygenated blood, all others carry oxygenated blood to the body.

pulmonary circulation—(pul'mo-na-re) the circulation of the blood through the lungs, the flow being from the right lower chamber of the heart (right ventricle) through the lungs, back to the left upper chamber of the heart (left atrium).

pulmonary valve—(pul'mo-na-re) valve, formed by three cup-shaped membranes at the junction of the pulmonary artery and the right lower chamber of the heart (right ventricle). When the right lower chamber contracts, the pulmonary valve opens and the blood is forced into the artery leading to the lungs. When the chamber relaxes, the valve is closed and prevents a backflow of the blood.

pulmonary veins—(pul'mo-na-re) four veins (two from each lung) which conduct oxygenated blood from the lungs into the left upper chamber of the heart (left atrium).

pulse—(puls) the expansion and contraction of an artery which may be felt with the finger.

pulse pressure—(puls) the difference between the blood pressure in the arteries when the heart is in contraction (systole) and when it is in relaxation (diastole).

quinidine—(kwin'i-deen) a drug sometimes used to treat abnormal rhythms of the heart beat.

reflex—(re'fleks) involuntary action.

regurgitation—(re-gur-ji-ta'shun) the backward flow of blood through a defective valve.

rehabilitation—(re-hah-bil-i-ta'shun) the return of a person disabled by accident or disease to the maximum attainable physical, mental, emotional, social and economic usefulness, and, if employable, an opportunity for gainful employment.

renal—((re'nal) pertaining to the kidney.

renal circulation—(re'nal) the circulation of the blood through the kidneys. Important in heart disease because of its function in the elimination of water, certain chemical elements, and waste products from the body.

renal hypertension—(re'nal hi-per-ten'shun) high blood pressure caused by damage to or disease of the kidneys.

resuscitate—(ri-sus'i-tat) to revive; to recover from unconsciousness.

rheumatic fever—(ru-mat'ik) a disease, usually occurring in childhood, which may follow a few weeks after a streptococcal infection It is sometimes characterized by one or more of the following: fever, sore swollen joints, a skin rash, occasionally by involuntary twitching of the muscles (called St. Vitus Dance) and small nodes under the skin. In some cases the infection affects the heart and may result in scarring the valves, weakening the heart muscle, or damaging the sac enclosing the heart.

rheumatic heart disease—(ru-mat'ik) the damage done to the heart, particularly the heart valves, by one or more attacks of rheumatic fever. The valves are sometimes scarred so they do not open and close normally.

rigid—(rij'id) stiff; not easily bent.

rugae—(roo'je) wrinkles or folds.

S-A node—(nod) a small mass of specialized cells in the right upper chamber of the heart which gives rise to the electrical impulses that initiate contractions of the heart. Also called sino-atrial node or pacemaker.

sciatic—(si-at'ik) pertaining to the ischium.

sclerosis—(skle-ro'sis) hardening, usually due to an accumulation of fibrous tissue.

secondary hypertension—(hi-per-ten'shun) an elevated blood pressure caused by (i.e. secondary to) certain specific diseases or infections.

sedative—(sed'ah-tiv) a drug which depresses the activity of the central nervous system, thus having a calming effect. Examples are barbiturates, chloral hydrate, and bromides.

semen—(se'men) Latin for seed: male reproductive fluid.

septum —(sep'tum) a dividing wall.

1. Atrial or inter-atrial septum. Muscular wall dividing left and right upper chambers (called atria) of the heart.

2. Ventricular or inter-ventricular septum. Muscular wall, thinner at the top, dividing the left and right lower chambers (called ventricles) of the heart.

serum—(se'rum) the fluid portion of blood which remains after the cellular elements have been removed by coagulation. It is different from plasma which is the cell-free liquid portion of uncoagulated blood.

sign—any objective evidence of a disease. "What you see."

sino-atrial node—(si-no-a'tre-al) a small mass of specialized cells in the right upper chamber of the heart which gives rise to the electrical impulses that initiate contractions of the heart. Also called S-A node or pacemaker.

sodium—(so'de-um) a mineral essential to life, found in nearly all plant and animal tissue. Table salt (sodium chloride) is nearly half sodium. In some types of heart disease the body retains an excess of sodium and water, and therefore sodium intake is restricted.

sphygmomanometer—(sfig'mo-mah-nom'e-ter) an instrument for measuring blood pressure in the arteries.

spontaneous—(spon-ta'nē-us) arising from impulse, without forethought or restraint.

sterile—(ster'il) free from living germs or microorganisms.

sternum—(stur'num) a bone or series of bone extending along the middle line of the ventral portion of the body of most vertebrates, consisting in humans of a flat, narrow bone connected with the clavicles and the true ribs; the breastbone.

stethoscope—(steth'o-skop) an instrument for listening to sounds within the body.

stimulus—(stim'yoo-les) agent that causes a change in the activity of a structure.

Stokes-Adams syndrome—(sin'drom) sudden attacks of unconsciousness, sometimes with convulsions which may accompany heart block

stress—(stres) according to Selye, physiological stress is a condition in the body produced by all kinds of injurious factors that he calls

"stressors" and manifested by a syndrome (a group of symptoms that occur together).

stressor—(stres'or) any injurious factor that produces biological stress; for example, emotional trauma, infections, severe exercise.

striated—(stri'at-id) marked with parallel lines.

stroke—(strōk) also called apoplectic stroke, cerebrovascular accident, or cerebral vascular accident. An impeded blood supply to some part of the brain, generally caused by:

1. a blood clot forming in the vessel (cerebral thrombosis).
2. a rupture of the blood vessel wall (cerebral hemorrhage).
3. a piece of clot or other material from another part of the vascular system which flows to the brain and obstructs a cerebral vessel (cerebral embolism).
4. pressure on a blood vessel, as by a tumor.

stroke volume—(strok) the amount of blood which is pumped out of the heart at each contraction of the heart.

superior—(se-per'i-er) higher; opposite of inferior.

supine—(su'pin) lying on the back, with the face upward.

supraorbital margin—(supra'or'bi-tal mar'jin) bony structure above the eyes.

sympathetic nervous system—(sim-pah-thet'ik) a part of the autonomic nervous system or involuntary nervous system, it regulates tissues not under voluntary control, e.g., glands, heart, and smooth muscle.

symptom—(simp'tum) any subjective evidence of a patient's condition. "What the victim tells you."

syncope—(sin'ko-pe) a faint. One cause for syncope can be an insufficient blood supply to the brain.

syndrome—(sin'drom) a set of symptoms which occur together and are therefore given a name to indicate that particular combination.

systemic circulation—(sis-tem'ik) the circulation of the blood through all parts of the body except the lungs, the flow being from the left lower chamber of the heart (left ventricle) through the body, back to the right upper chamber of the heart (right atrium).

systole—(sis'to-le) in each heart beat, the period of contraction of the heart. Atrial systole is the period of the contraction of the upper chambers of the heart, called the atria. Ventricular systole is the period of the contraction of the lower chambers of the heart, called the ventricles.

tachycardia—(tak-e-kar'de-ah) abnormally fast heart rate. Generally, anything over 100 beats per minute is considered a tachycardia.

tarsus—(tar'ses) instep.

tendon—(ten'den) band or cord of fibrous connective tissue which attaches a muscle to a bone or other structure.

terminate—(tur'mi-nāt) to limit or put an end to.

therapist—(ther'ah-pist) a person skilled in the treatment of disease.

thorax—(tho'raks) chest.

thrombectomy—(throm-bek'to-me) an operation to remove a blood clot from a blood vessel.

thrombin—(throm'bin) the enzyme which causes the coagulation of blood; a preparation to control capillary bleeding.

thrombolytic agents—(throm-bo-lit'ik) substances which dissolve blood clots.

thrombophlebitis—(throm'bo-fle-bi'tis) inflammation and blood clotting in a vein.

thromboplastin—(throm-bo-plas'tin) a lipid protein that promotes clotting, found in blood platelets.

thrombosis—(throm-bo'sis) the formation or presence of a blood clot (thrombus) inside a blood vessel or cavity of the heart.

thrombus—(throm'bus) a blood clot which forms inside a blood vessel or cavity of the heart.

thyrotoxic—(thi-ro-tak'sik) pertaining to overactivity or abnormal activity of the thyroid gland.

tibia—(tib'i-a) Latin for shin bone.

tourniquet—(tur'ni-kit) a bandage which is tightened by twisting to stop hemorrhage.

toxemia—(toks-e'me-ah) the condition caused by poisonous substances in the blood.

toxic—(tok'sik) pertaining to poison.

transportation — primary—ambulances and other ground, air and water emergency vehicles providing direct BLS and ALS services.

transportation — secondary—air and ground ambulances providing interhospital transportation by appropriate critical care vehicles for ALS services.

trauma—(trau'ma) injury.

tricuspid valve—(tri-kus'pid) a valve consisting of three cusps or triangular segments located between the upper and lower chamber in the right side of the heart. Its position corresponds to the bicuspid or mitral valve in the left side of the heart.

umbilicus—(um-bil'i-kes) navel.

uremia—(u-re'-me-ah) an excess in the blood of certain waste substances normally excreted by the kidneys.

vagina—(va-ji'na) sheath.

vagus nerves—(va'gus) two of the nerves of the parasympathetic nervous system which extend from the brain, through the neck and thorax into the abdomen. Known as the inhibitory nerves of the heart, they slow the heart rate when stimulated.

valve—(valv) structure which permits flow of a fluid in one direction only.

valvular insufficiency—(val'vu-lar) valves which close improperly and admit a back flow of blood in the wrong direction.

vascular—(vas'ku-lar) pertaining to or full of vessels.

vasoconstrictor—(vas'o-kon-strik'tor) the vasoconstrictor nerves are one part of the involuntary nervous system. When these nerves are stimulated they cause the muscles of the arterioles to contract, thus narrowing the arteriole passage, increasing the resistance to the flow of blood, and raising the blood pressure. Chemical substances which stimulate the muscles of the arterioles to contract are called vasoconstrictor agents or vasopressors. An example is adrenalin or epinephrine.

vasodilator—(vas'o-di-lat'or) vasodilator nerves are certain nerve fibers of the involuntary nervous system which cause the muscles of the arterioles to relax, thus enlarging the arteriole passage, reducing resistance to the flow of blood, and lowering blood pressure. Vasodilator agents are chemical compounds which cause a relaxation of the muscles of the arterioles. Examples of this type of drug are nitroglycerine, nitrates, thiocyanate, and many others.

vaso-inhibitor—(vas'o-in-hib'i-tor) an agent or drug which inhibits the action of the vasomotor nerves. When these involuntary nerves are inhibited, the muscles of the arterioles relax, and the passage inside the arteriole is enlarged, and the blood pressure is lowered. Examples of this type of drug are compound of nitrite.

vasopressor—(vas-o-pres'or) a chemical substance which causes the muscles of the arterioles to contract, narrowing the arteriole passage, and thus raises the blood pressure. Such substances are also called vasoconstrictors. An example is adrenalin or epinephrine.

vein—(vain) any one of a series of vessels of the vascular system which carries blood from various parts of the body back to the heart. All veins in the body conduct unoxygenated blood except the pulmonary veins which conduct freshly oxygenated blood from the lungs back to the heart.

vena cava—(ve'nah ka'vah) superior vena cava is a large vein conducting blood from the upper part of the body (head, neck and thorax) to the right upper chamber of the heart. Inferior vena cava is a large vein conducting blood from the lower part of the body to the right upper chamber of the heart.

venous—(vē'nos) pertaining to or full of veins.

venous blood—(ve'nus) unoxygenated blood. The blood, with hemoglobin in the reduced state, is carried by the veins from all parts of the body back to the heart and then pumped by the right side of the heart to the lungs where it is oxygenated.

ventral—(ven'trel) of or near the belly; in humans, front or anterior; opposite of dorsal or posterior.

ventricle—(ven'tre-kl) one of the two lower chambers of the heart. Left ventricle pumps oxygenated blood through arteries to the body. Right ventricle pumps unoxygenated blood through pulmonary artery to lungs. Capacity about 85 cc.

ventricular septum—(ven-trik'u-lar sep'tum) sometimes called inter-ventricular septum. Muscular wall, thinner at the top, dividing the left and right lower chambers of the heart which are called ventricles.

venule—(ven'ul) a very small vein.

veratrum—(ve-ra'trum) a drug which lowers blood pressure and decreases the heart rate. One of the anti-hypertensive agents.

vermiform—(vur'me-form') worm-shaped.

viscera—(vis'er-a) internal organs.

volatile—(vol'a-til) having the quality of passing off quickly by evaporation.

voluntary—(vol'an-ter-ē) acting or done of one's own will.

xanthine—(zan'thin) a class of drugs used to increase the excretion of urine. A diuretic.

xiphoid—(zif'oid) sword-shaped.

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